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ABSTRACT

The report describes the sixth year in which a survey has been conducted on sensory impaired students in Texas. The survey resulted in information on student demographics and on performance on the Stanford Achievement Test for Hearing Impaired Students (SAT-HI). Demographic data revealed that hearing aids were widely used; that 43% of students in regional day school programs had profound hearing losses; and that 9% of the students in the regional programs used sign language in their instructional programs, even though only 37% used sign language at home. Assessment data examines the mean yearly growth in SAT-HI scores and presents an item analysis of the mathematics subtest of the SAT-HI as it compares to the Texas Statewide Curriculum for the Deaf. A section on the uses of the data management system considers such applications as tabulations prepared for each program submitting information and answers to special program planning requests. Among appendixes are survey forms and detailed demographic tables. (CL)

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TEXAS STATE SURVEY OF HEARING IMPAIRED CHILDREN AND YOUTH

1981-82 FINAL REPORT

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October 1982

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TEXAS STATE SURVEY OF HEARING IMPAIRED CHILDREN AND YOUTH

1981-82 FINAL REPORT

INTRODUCTION

The 1981-82 academic term was the sixth consecutive year that the Texas Education Agency (TEA) contracted with the Center for Assessment and Demographic Studies (CADS) to conduct the Texas State Survey of Hearing Impaired Children and Youth. This data management system was implemented and is maintained to collect and analyze demographic and assessment information on those children enrolled in the Regional Day School Programs for the Deaf (RDSD) and the Texas School for the Deaf (TSD). Information from the system is made available to educators and program administrators at all levels of instruction within the state.

Over the six years the system has been in operation, there has been increasingly close collaboration between the CADS staff and personnel at the TEA State Office, the Texas School for the Deaf, and special education staff at the Regional Day School Programs across the state. As a result of this combined effort, an extensive data base on over 5,200 hearing impaired children in Texas has been established and utilized for educational planning, research, and management purposes.

One of the most important features of the Texas Survey during this past year has been the collection of information on the provision of educational services to hearing impaired children, especially those who are integrated with normally-hearing children for all or a portion of the school day. Information was also sought on those children who have completed their educational program or have withdrawn from the program they previously attended.

Another major focus of the current project has been in the area of assessment of academic achievement. All programs were strongly encouraged to administer the Special Edition for Hearing Impaired Students of the Stanford Achievement Test (SAT-HI) in the spring of 1982. In addition to the reports which analyzed individual student scores, school assessment summary reports were provided. A longitudinal study of SAT-HI scores over a five-year period was undertaken, and an analysis of the relationship of the Mathematics sub-test items on the SAT-HI to the Texas Statewide Curriculum for the Deaf has been completed.

This report will describe the methodology used in collecting the information, summarize the activities which were undertaken by CADS and the TEA staff, and highlight some of the demographic and assessment findings for the 1981-82 school year. Also presented will be a review of the various project reports prepared for personnel at TEA in Austin and for the administrative staff and teachers at the educational programs which participated in the project.

METHODOLOGY AND PROJECT ACTIVITIES

In all steps of the project, there was close cooperation between the staff of the Texas Education Agency, the personnel at the educational programs, and the staff at CADS. The activities described below utilized the skills and knowledge of individuals at all levels of educational program planning within the state.

-- Design of Form: Input on the design of the survey form (Appendix 1) was received from the staff at TEA. The information requested on each pupil was determined to be important for educational planning purposes; information needed to answer the specific questions was believed to be readily available so that respondents would not be faced with a lengthy task in completing the form.

-- Collection of Demographic Data: Information was sought on all children and youth who had a hearing impairment and who were attending a Regional Day School Program for the Deaf or receiving services at the Texas School for the Deaf. As some students are served on a contract basis by TEA at two private schools for the deaf, these programs were also included; they are the Houston School for Deaf Children and the Sunshine Cottage School for Deaf Children.

The strategy used for gathering the information was to contact all of the programs mentioned above and request them to complete a survey form on each child they serve. If a program had participated in the survey during the 1980-81 school year, they received a partially completed, computer-printed form for each of the students they had reported that year, and were only required to update this previously reported information. In addition, there were several new questions on the form which had to be completed for all children. (If a child reported last year no longer was at the program, the respondent simply indicated this, completed the "Former Student Information" section of the form, and returned it with the other documents.) A supply of blank forms was provided for use in reporting information on all new students.

The completed forms were returned to the Regional Directors' offices where they were reviewed before being sent to the CADS office for processing. Follow-up contacts via phone and letter were made with those programs which did not return the questionnaires.

-- Data Processing: A number of verification and editing procedures were performed by the CADS data processing staff to assure a high degree of accuracy in the data file. The information was processed using Gallaudet College's Digital Equipment Corporation DEC-System 1080/KL-10 time-sharing computer. Most of the information on the forms was optically scanned using a Sentry 7001. Data such as names and other "write-in" information which could not be processed in that manner were entered onto computerized disk through CRT terminals utilizing key-to-disk processing. All of the computer programs necessary for this data processing and analysis were developed by the CADS programming staff.

-- Measurement of Academic Achievement: To meet the second objective of the project, i.e., the collection and analysis of assessment information, test materials for the SAT-HI were distributed to programs wishing to test their students. Several scoring dates were offered to the programs to allow them to schedule testing which would best match their school calendars. The completed answer documents were returned to CADS for scoring and analysis. As the answer documents were received by CADS, they were edited for potential machine-reading errors; each was then assigned a "student identification number" to permit later matching with the demographic information submitted on the student form. The tests were then sent to the Psychological Corporation for machine-scoring. When the results were returned to CADS, Individual Student Score Reports were prepared and sent to the respective participating programs.

Several Regional Day School Programs also assisted CADS in a national assessment project to pilot-test new screening procedures to be used with the 1983 edition of the SAT-HI currently being developed. (These are the procedures which help teachers determine the appropriate test battery level for each student.) The programs selected to be in this national sample not only administered the SAT-HI 1973 edition, but also administered a short screening test for the new edition of the test. Twelve programs were invited to assist and 4 programs actually participated in the testing.

In this as in all its projects, CADS gives utmost attention to the protection of the confidentiality of its sources in all phases of data collection, analysis, and utilization. The procedures employed ensure that no information can be released that would permit identification of an individual student or program, except to authorized persons. All respondents are notified of this underlying principle. The CADS staff involved in the data processing have signed an oath of confidentiality; and, throughout the project, additional safeguards are used to limit access to the computerized data file to authorized individuals.

SCHEDULE OF ACTIVITIES

1981

November	- TEA awards contract to CADS to conduct the Texas Survey of Hearing Impaired Children and Youth
December	- CADS contacts all RDSD and other special programs; mailing includes "Schedule of Activities", "SAT-HI Information Packet", and "Newsletter"

1982

January	- CADS distributes pre-printed survey forms to previously participating programs - CADS contacts all new programs inviting them to participate
February	- Survey office distributes additional blank forms as requests are received - Programs return completed forms to Regional Directors - CADS distributes memorandum to programs reminding them of SAT-HI testing
March	- Regional Directors forward completed forms to CADS - SAT-HI scoring scheduled
April	- CADS initiates follow-up procedures with those programs which have not returned forms - Final SAT-HI scoring provided - CADS staff meets with State Advisory Committee (SAC)/State Coordinating Committee (SCC) in Austin
May	- CADS distributes SAT-HI Student Score Reports to participating programs
June	- CADS presents SAT-HI workshop to Regional Coordinating Committee in Houston
June - September	- Processing and analysis of data
October	- CADS distributes various reports to schools, Regional Directors, and the TEA office

DISCUSSION OF THE DATA

The presentation of the data collected in the survey will focus on several areas. The first section will highlight the demographic information collected during the 1981-82 school year. This will include both the children currently enrolled in the educational programs and those who withdrew from or did not return to the program they had previously been attending.

The second area to be discussed is the academic assessment data which has been collected. Data from a longitudinal study of SAT-HI scores over a five year period will be presented. Information will also be presented which relates the SAT-HI mathematics sub-test items to the Texas Statewide Curriculum for the Deaf.

Highlights of the Demographic Data

Participation in the Texas State Survey was marked this year by almost 100% participation of programs asked to submit data and by an increase over the two previous academic years in the number of students reported. As can be seen from Table 1, 75 programs were asked to participate and 73 of these submitted student demographic records on a total of 4,363 students. An additional 876 records were processed on children who had been enrolled and were reported to the Survey for the 1980-81 school year but who had withdrawn from their programs for the 1981-82 term.

TABLE 1: PARTICIPATION IN THE TEXAS STATE SURVEY OF HEARING IMPAIRED CHILDREN AND YOUTH, 1981-82

Participation Status	TOTAL	Regional Day School for the Deaf	Texas School for the Deaf	Other
Total Programs Contacted	75	72	1	2
Programs Participating	73	70	1	2
Programs Not Responding	2	2	-	-
Number of Students Enrolled, 1981-82	4363	3749	471	143
Number of Students Withdrawn*	876	759	73	44

* Students reported by programs in 1980-81 who did not return to the same program for the 1981-82 academic year.

This year the quality of the demographic information submitted remained at a high level. The non-response rates for particular questionnaire items were relatively low, and most programs were able to report data on the topics requested on the form.

The detailed tables found in Appendix 2 display the demographic information in several formats. One series of tables presents a summary of the characteristics of the students in each of the five geographic regions and in the three special schools.

(The special schools are combined in a category labeled "Cluster S.") Another series of tables present the data by type of educational program. In these tables, the categories used are "Regional Day School Programs," "Texas School for the Deaf," and "Other." The "Other" category contains data from the two private schools.

Below are some additional highlights of the data taken from the detailed tables in the Appendices. The statements are not noted in any particular order of importance. They in no way exhaust the possible analysis of the data base, but are meant to serve only as points of discussion to encourage further analysis by the reader.

- The five clusters varied in size of enrollment from 1,074 students (Cluster D) to 425 students (Cluster B).
- The largest single age group for the entire state was that of seventeen year olds who numbered 580. There were 335 children 16 years old.
- Forty-three percent of the children in RDSD programs had hearing losses in the profound range; the percentage at TSD was 74%; and in the two private programs the percentage was 48%.
- Children in the RDSD and the private programs had had audiological examinations administered more recently than had the children at TSD. Seventy percent of the children at the RDSD and private programs were tested between 1980 and 1982; only 34% of the students at TSD had been tested within this same time period.
- The most frequently reported reason for incomplete audiological test results was that the attempt to test had been unsuccessful.
- Hearing aids were widely used by the students. Eighty-four percent of the students at RDSD programs, 82% of those at TSD, and 94% of those at private programs were reported to use hearing aids.

- Seventy-nine percent of the students at RDSD programs were reported to use sign language in their instructional programs, but only 37% were reported to use sign language at home. All TSD students used sign language at school, but only 46% were reported to use it at home. Sign language use at the private schools was reported for only three children.

- Twelve percent of the students at TSD had at least one parent who is deaf; at the RDSD programs and the private schools, the corresponding figures are 6% and 2%, respectively.

- English was the language most frequently reported to be spoken in the children's homes, although Spanish was reported to be spoken regularly in the homes of 20% of the students in the RDSD programs.

- The reason most frequently given for a student's not returning to the same RDSD program this year was that the student's family had moved out of the area (28%). At TSD, however, more than half of the students who did not return to the program this year did not return because they had completed the course of instruction.

Highlights of the Assessment Data

As has already been mentioned, a keystone of the Texas Survey over a number of years has been the assessment of academic achievement. The instrument used has been the Special Edition for Hearing Students of the Stanford Achievement test (SAT-HI). In the spring of 1978, 1979, 1980, and 1982, all programs in Texas were strongly encouraged to test their hearing impaired students 8 years of age and older. (In the spring of 1981, testing services were provided to those programs which wished to test, but only materials and minimal scoring services were offered; there was no statewide collection of data or summary reports.)

A large number of hearing impaired students was tested in each of the years in which testing services were offered. Forty-nine programs, two-thirds of all programs in the Survey, submitted SAT-HI test answer forms to CADS for scoring in the spring of 1982. These programs tested 2,156 students, almost 80% of all age-eligible children in Texas.

Assessment data were provided to the programs, Regional Directors, and the state office in several formats. These included Individual Student Score Reports, SAT-HI School Summary Reports, and Longitudinal SAT-HI Reports. All of these documents are described in detail in a later section of this report, and samples of them can be found in the Appendices.

This report will focus on two areas of particular interest: -- the mean yearly growth in scores and an item analysis of the mathematics sub-test of the SAT-HI as it compares to the Texas Statewide Curriculum for the Deaf.

--Longitudinal Study: The results of a longitudinal analysis of mean yearly growth in SAT-HI scale scores over a four-year period are presented in Table 2. Mean growth in achievement scores are shown in three sub-test areas: Reading Comprehension, Mathematics Concepts, and Mathematics Computation. The number of students for whom these data were available over the four-year period is also shown. The scale score is used for this comparison because it permits comparison of scores over different levels of the test.

For the entire state, students gained an average of 3.7 scale score points each year in Reading Comprehension from 1978-82. They also gained an average of 5.5 scale score points a year in Mathematics Concepts, and an average 6.7 points in Mathematics Computation. These scores were above what has been found in previous studies of achievement growth for hearing impaired students (Trybus & Karchmer, 1977; Rawlings & Allen, 1980).

Also shown in Table 2 are the mean growth scores for each cluster. These should be interpreted with some caution because various factors influence the scores for each cluster. First, the number of students tested varies among clusters, and if the number is small, a few individual scores which are exceptionally high or low may affect the overall average. The other important consideration is the influence of demographic characteristics of the students who took the test. As has been pointed out in previous reports on academic achievement, severity of hearing loss, the presence of additional handicapping conditions, and ethnic background are factors which may affect achievement scores. To the extent that clusters differ with respect to these characteristics, the mean growth scores will also differ.

TABLE 2: MEAN YEARLY SCALE SCORE GROWTH ON THE SAT-HI, BY CLUSTER, 1978-1982

REVISED, 30 NOVEMBER 1982

AREA	SAT-HI SUB-TEST								
	READING COMPREHENSION			MATHEMATHICS CONCEPTS			MATHEMATICS COMPUTATION		
	(N)	Mean	SD	(N)	Mean	SD	(N)	Mean	SD
State*	(1491)	3.6	3.8	(1445)	5.4	5.6	(1449)	6.6	5.9
Cluster A	(180)	4.3	4.1	(181)	6.4	5.7	(180)	6.9	5.9
Cluster B	(141)	4.2	3.7	(140)	7.7	6.1	(140)	8.0	5.9
Cluster C	(287)	4.0	4.0	(285)	5.9	6.4	(283)	6.7	5.5
Cluster D	(349)	3.6	3.3	(336)	5.0	4.7	(336)	6.9	5.7
Cluster E	(260)	2.8	3.4	(228)	4.6	5.4	(237)	6.9	6.2

SD = Standard Deviation

* The state total also includes students at the Texas School for the Deaf.

-- SAT-HI Curriculum Match: The relationship of the SAT-HI test items to the Texas Statewide Curriculum for the Deaf has been a question of continuing interest to Texas educators of the hearing impaired. This year an attempt was made to analyze the relationship between the content of the SAT-HI mathematics subtests and the mathematics content areas of the Statewide Curriculum.

Typically, educational decisions involving hearing impaired students rely, at least in part, on results from standardized achievement tests. If one considers that these instruments were created to measure achievement of objectives in public school curricula for normally hearing students, then one might wonder whether or not those same achievement tests would be valid for assessing achievement of curriculum objectives specially designed for hearing impaired students. In general, therefore, the study reported here is in response to the question: to what extent is a standardized test used with hearing impaired students reflective of the curriculum designed for students in special education programs? In particular, the purpose of this study was: 1) to compare the objectives in the Texas Statewide Math Curriculum with the test items in the math portion of the SAT-HI; and 2) to examine student achievement on the SAT-HI math items in terms of the Texas math curriculum.

Often referred to as "The Roadmap" by those who use it, the Texas Statewide Curriculum contains explicit math objectives for guiding classroom instruction and student learning through six stages of development. Within each of the six stages, the math content objectives are divided into four areas: concepts of numeration, properties of math computation, principles of geometry and measurement, and language and reasoning in mathematical processes. The structure and organization of these objectives are sound; consequently, the math curriculum is amenable to a content analysis. However, since this study does not include data on the ways in which the Texas curriculum is actually implemented in the classroom and because the use of the curriculum is likely to vary among schools and teachers, this is a study only of the *apparent* match between curriculum objectives and test items.

There are several steps involved in assessing the content validity of the SAT-HI in terms of the math objectives in the Texas curriculum. The first is identifying the content elements in each test item; the second is matching item and objective content elements; and the third is evaluating that match.

More specifically, the first step of identifying elements in each test item refers to examining the content according to: 1) the *type* of content tested -- information, concepts, or procedures; and 2) the *intellectual operations* students are expected to perform on or with the content -- demonstration of knowledge, comprehension, application, or analysis of the content. For example, Item #30 in the computation subtest of Level 2, is: $\begin{array}{r} 422 \\ \underline{-136} \end{array}$. A content analysis of the item indicates that the type of content is procedure -- vertical subtraction with regrouping. The intellectual operation the student is expected to demonstrate is knowledge of that procedure. The student should be able to perform the steps in the subtraction procedure, then select the correct answer from four choices.

Once the type of content and intellectual operation tested by an item are identified, the next step is finding a curriculum objective with identical content elements. In the case of the subtraction problem cited above, the objective with content elements that seem to match those in the item is found in Stage III, B.2.d: "be able to subtract one-,two-, three-, and four-digit numbers vertically (regrouping)" (p. 105).

After the first two steps are carried out on an item-by-item basis, the third and final step involves evaluating the match between the entire math SAT-HI (Levels 1-6) and the Texas math curriculum (Stages 1-6). The basis for this evaluation is the type and number of items in each SAT-HI test level for which a corresponding objective or group of objectives was found.

But in order to decide if this information has any real utility for the Texas special education program, the match reported here (or any match between objectives and test items) must be considered in relation to instructional goals and testing purposes. In the case of Texas, the users of the Texas curriculum and the SAT-HI are the only ones who can make that determination. It should be noted that since it is neither feasible nor desirable to represent all curriculum objectives in a standardized achievement test, it is necessary to decide if the objectives tested represent those considered essential for summarizing student achievement. Those curriculum objectives which are not tested on a standardized achievement test, on the other hand, may well be those that are measured intermittently in order to monitor the progress of student learning.

For the purposes of this report, the match between the content elements of the math SAT-HI and the Texas math curriculum created a basis for examining student achievement on the SAT-HI. This examination was solely of each item's level of difficulty (item difficulty or p value) in terms of the curriculum objective to which it was matched. Given that an item difficulty represents the proportion of students who answered the item correctly, .70 is usually the point below which a multiple choice item with 5 distractors is considered difficult (Lord, 1952). That is, .70 indicates that 70% of the students answered an item correctly.

The results of the content analysis are presented in Appendix 3 for each item in the math SAT-HI, levels 1-6. In Appendix 4, the results are presented by curriculum objective and corresponding test level. Whereas none of the objectives were found to be tested at all six SAT-HI levels, many were tested at more than two different levels. A summary of this analysis is presented in Table 3.

TABLE 3: TEXAS CURRICULUM COMPONENTS AT EACH SAT-III LEVEL

SAT-III test	Total Number of items	Curriculum Components		Number of items tested per stage
		Stage	Objectives	
*PRIMARY 1	64	I	7	13
		II	13	29
		III	4	12
		IV	1	4
		*No "match" found for 6 items		
*LEVEL 2	99	II	17	21
		III	20	58
		IV	2	15
		*No "match" found for 3 items		
*LEVEL 3	100	II	14	15
		III	26	60
		IV	11	22
		*No "match" found for 3 items		
*LEVEL 4	120	III	10	20
		IV	28	94
		V	3	3
		*No "match" found for 3 items		
*LEVEL 5	120	II	1	2
		III	9	13
		IV	17	45
		V	21	50
		*No "match" found for 12 items		
*LEVEL 6	120	II	1	2
		III	3	3
		IV	11	14
		V	16	44
		VI	8	30
		*No "match" found for 18 items		

The data in Table 3 indicates that objectives for Stage I of the curriculum are only tested in the Primary level of the SAT-HI. In addition, 70% of the Primary level items reflect skills that are in objectives of curriculm Stages II, III, and IV and only 20% of the items represent objectives in Stage I. (No objectives were found to represent the remaining 10% of the items.) Therefore, a student who has not finished Stage I of the curriculum is not apt to be ready for the Primary level of the math SAT-HI.

On the other hand, Stage II objectives were found to be fairly evenly distributed among the first three levels of the SAT-HI, Stage II objectives at test levels 2 and 3, Stage IV objectives at test levels 3-6, Stage V objectives at levels 4 and 5, and Stage VI objectives only at test level 6. In test level 6, only 25% of the items were found to reflect objectives at Stage VI of the curriculum, whereas 37% of the items were found to match objectives at Stage V. Consequently, it seems that a student who has finished stage VI of the Texas curriculum is likely to find the level 6 SAT-HI math test too easy; while a student at the end of Stage IV would probably find that test far too difficult.

Again, however, the numbers of items per objective per curriculum stage is less important than whether or not the objectives represented on the SAT-HI are the ones considered essential to test.

In Table 3, item difficulties (p values) are presented next to the curriculum objectives for each item. The reader will notice that there are two columns of item difficulty levels. The first column represents the item difficulties for the sample of hearing impaired students in Texas who took the SAT-HI in 1981 *and* whose teachers indicated on the 1981 Texas State Survey of Hearing Impaired Children and Youth that they use the Texas Statewide Curriculum. The other, or rightmost, column represents the item difficulty level for the 1973 norm group as created by the Psychological Corporation for the norming of the Stanford Achievement Test (SAT). This second column is included in Appendix 3 simply to give the reader a point of comparison for thinking about the item difficulty levels for the Texas sample. One way to look at the item difficulties is to compare the item difficulty for the Texas students with the item's place in the Texas curriculum to determine if the item is of comparable difficulty for hearing students in the norming sample.

In general, these item difficulties indicate that Texas students tend to find from 30-40% of the concepts and applications problems quite difficult ($p \leq .50$). On the other hand, fewer computational problems (5-15%) tend to be as difficult. Beyond examining each individual item, however, this data might be a useful basis for future studies relating the curriculum to the teaching-learning process and addressing such questions as: at what Stage of the curriculum and in what instructional sequence do the difficult items appear? and, are there instructional conditions within a curriculum Stage which tend to minimize differences in standardized test achievement?

In summary, the results of this study suggest that the content of the math SAT-HI is valid for testing student achievement of objectives in the Texas Statewide Math Curriculum. Of a total of 623 math items in six levels of the SAT-HI, there were a total of only 45 items (7%) for which there seemed to be no corresponding curriculum objective. Also, there was no clear evidence of student achievement being related to whether or not a test item was found to have a corresponding objective. There was, however, a tendency for the level of difficulty for the "no-match" items to be lower than that for the matched items. Overall, this report represents some very preliminary work in a continuing study of ways to improve an instructional program. As tests of student achievement are typically one indicator of a program's effectiveness, determining the congruence between what is intended to be learned as stated by curriculum objectives and what learning is tested is an essential first step.

USES OF THE DATA MANAGEMENT SYSTEM

As already mentioned, the data collected in the Texas Survey has been used for a variety of educational planning needs during the past academic year. Both the demographic and academic assessment information have been accessed, and individuals at all levels of program administration have been able to utilize the data base. Described below are some of the applications of the system.

SAT-HI Student Score Reports:

For those children who took the Stanford Achievement Test for Hearing Impaired Students, an individual score analysis (see Appendix 5) was returned to the child's educational program. These score reports included student's name, school, birthdate, age at testing, test date, and the test level taken. The main body of the report listed each of the subtests taken by the student and divided these subtests into the various item groupings which made up the subtest, e.g., math computation is broken down into "knowledge of primary facts," "addition and subtraction," "multiplication and division," "common fractions," and "other operational models." Thus, a teacher who wishes to learn how an individual student is doing, not just in math computation in general but in multiplication and division specifically, can go to that section of the score report for a breakdown of the student's achievement in that area.

Also shown on the report were the total number of questions on the subtest and item groupings, the number the student answered correctly, the number answered incorrectly, the number left blank, and the percentage answered correctly.

A second set of columns pertained to the subtests only and not to the subgroupings within the subtests. These columns listed:

A. the scaled score, a special type of measurement result which permits analysis of a student's growth in a specific instructional area across battery levels and across years or different test administrations. Thus, if a teacher wishes to learn what kind of progress a student has made in math computation over a period of three years, an examination of the scaled score in this area over the yearly testing should be of great assistance in determining this progress or its lack. On the Stanford, a scaled score of 132 is defined as the performance of an average (hearing) student in the second month of the third grade, and 182 represents the average performance of the median (hearing) student in the second month of the eighth grade. Each scaled score unit on the Stanford thus represents one theoretical academic month.

B. the grade equivalent score, which is a comparison of the student's score results on a particular subtest with hearing children who took the same level of the test. Although this grade equivalent score is familiar to most teachers and administrators, it should be used with great caution in regard to hearing impaired youngsters since it reflects a comparison based not on age but on test level taken.

C. the hearing impaired percentile rank, a comparison of the student's score results with hearing impaired students of the same age who took part in the national achievement test standardization program in 1974.

SAT-HI School Summary Reports:

Each program received a summary of the SAT-HI results for its own educational program. This report also provided data on the average scale scores for the regional cluster and the entire state. The report categorized the findings by age groups and included a summary of the demographic information on the students who were tested. The important demographic factors which might influence academic achievement and should be considered in analyzing the results include age, ethnicity, additional handicaps, and severity of hearing loss. These reports are a useful part of program evaluations. (See Appendix 6)

Longitudinal SAT-HI Reports:

For programs which tested their children in the spring of 1982, reports were prepared which compared SAT-HI results over the years that such testing has been a part of the Texas Survey. (Statewide testing was conducted in the spring of 1978, 1979, 1980, and 1982.)

Shown on each report were the student's name, current age, and severity of hearing loss, the years tested, the levels of the test taken, and scale scores for the sub-tests of Reading Comprehension, Mathematics Concepts, and Mathematics Computation. A summary was provided of the average (mean) yearly growth in each of these sub-test areas. The school summary of growth was also shown on this report. (See Appendix 7)

Reporting Source Summaries:

These tabulations are prepared for each program submitting information to the data management system. The report summarized the characteristics of the student population at the particular program and compared this information to that reported for the regional cluster, the entire state, and the nation. Among the variables selected for comparison were sex, additional handicapping conditions, age at onset of hearing loss, and cause of hearing loss. Each participating program received a copy of the information on students in that program; the Regional Director of Services for the Deaf was sent a set of reports on all programs within his/her region; and the state office received a complete set of these reports. Educational administrators at all levels can utilize these Reporting Source Summaries in program planning by being able to compare the characteristics of a specific school population to that of the entire state. By recogizing similarities and differences in the enrollments, insights are gained which can affect planning decisions. (A sample page from this five-page report is shown in Appendix 8.)

Detailed Tabulations:

The Office of the Director of Services for the Deaf at TEA received a series of specialized tabulations on the entire school enrollment. These computer-generated reports provided various breakdowns of the population by school categories. Several reports were prepared by displaying the demographic characteristics of the students by age. Listings of the student population by name and site of service were also provided.

Workshops and Other Presentations:

Information on the Texas Survey was presented at a number of workshops and professional meetings during the past year. Among these activities were presentations by CADS staff to the State Advisory Committee and the State Coordinating Committee of the Services to the Deaf in Austin. An achievement testing workshop was also provided to the Regional Coordinating Committee on Services for the Deaf in Houston. Reports on the Survey were also made to the Advisory Committee of the Annual Survey of Hearing Impaired Children and Youth, and the Conference of Educational Administrators Serving the Deaf.

Special Data Requests:

During the academic year, CADS staff responded to a number of requests from program administrators, Regional Directors, and the state office for special tabulations of information to assist them in program planning. In response to a request from one large school system in the state, CADS staff prepared SAT-HI scores in a specially-tailored format which would assist in the development of Individual Education Plans (IEPs). Another request for data was submitted by one of the state university programs which was considering the development of a program for deaf students at the post-secondary level. CADS, with the permission of TEA, was able to provide some grouped statistical data for this organization.

Similarly, with clearance from TEA, information on the student population has been made available to the Texas Senate Committee on Human Resources and the Texas Commission on the Deaf. The data assisted those organizations in their efforts toward planning services to the hearing impaired population. CADS was also able to provide technical assistance to a number of teachers who were having difficulty interpreting SAT-HI test scores. Assessment personnel at CADS reviewed with the teachers the score reports for individual students, highlighting possible problem areas and providing information on some of the limitations of the test data.

CONCLUSIONS AND RECOMMENDATIONS

This sixth year of the Texas State Survey of Hearing Impaired Children and Youth met all of the objectives it set out to meet at the beginning of the academic year. The close cooperation between the TEA staff, the Regional Directors, the program administrators, and the CADS staff was instrumental in the success of the project. As with any project, however, there are several areas which might be strengthened or which need to be emphasized in the 1982-83 project.

A number of programs were invited during the year to submit suggestions and comments to their Regional Directors regarding the Texas State Survey. All of the comments received were constructive and insightful with regard to the operation of the survey and the usefulness of the reports received back at the program level.

Among the weaknesses cited were the amount of time required for completing the form, the timing of the distribution of survey forms (January and February), the need for additional SAT-HI scoring dates, and the need for additional SAT-HI analysis reports.

During the next academic year, CADS will attempt to address some of these concerns. The survey forms will be distributed in early November. This period in the school calendar was felt to be more appropriate and should allow for the return of the forms before the end of the school year. The scheduling of additional and earlier SAT-HI scoring dates should also be a change welcomed by several programs. The development of the SAT-HI longitudinal report showing student growth scores addresses requests made by a number of administrators. CADS will also attempt to provide more detailed suggestions on the possible interpretations and uses of the data when the reports are disseminated this year. CADS will work with TEA staff in the state office to reduce the amount of time needed to complete the records by eliminating questionnaire items where appropriate.

One of the strengths of the project mentioned frequently by program administrators was the Newsletter which was distributed to all programs last year summarizing the findings of the project and including articles of general interest to those who have responsibility for educating hearing impaired children. CADS plans to distribute another Newsletter with similar content areas during this school year.

Another feature which programs have indicated was useful was the demographic and SAT-HI reports which showed comparisons of data among programs within the cluster, state, and nation. CADS will continue to offer this type of information in forthcoming reports.

The SAT-HI component of the project was the subject of a number of very positive comments from persons who felt the test itself was a useful assessment instrument and who felt the reports that CADS provided were of assistance in program planning.

The increased usage of the data management system by individuals at all levels of the service delivery system continues to indicate the successfulness of the Texas State Survey of Hearing Impaired Children and Youth. The continuation of the project with the implementation of the features mentioned above should assure improved and even more comprehensive service during the 1982-83 school year.

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APPENDICES

1. Survey Form, 1981-82
2. Detailed Demographic Tables
3. Content Analysis of SAT-HI in Relationship to Texas Statewide Curriculum
4. Curriculum Objectives and SAT-HI Test Level
5. Individual Student Score Report
6. SAT-HI School Summary Reports
7. Longitudinal SAT-HI Reports
8. Reporting Source Summaries

APPENDIX 1

Survey Form, 1981-82

APPENDIX 2

Detailed Demographic Tables

TABLE A: Number and Percentage Distribution of Hearing Impaired Children in Texas by Age, 1981-82

AGE	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
Under 1 year	16	*	15	*	–	–	1	*
1 year	84	2%	72	2%	1	*	11	8%
2 years	104	2%	81	2%	8	2%	15	10%
3 years	151	4%	136	4%	–	–	15	10%
4 years	215	5%	191	5%	5	1%	19	13%
5 years	177	4%	156	4%	4	1%	17	12%
6 years	190	4%	170	4%	10	2%	10	7%
7 years	203	5%	181	5%	7	2%	15	10%
8 years	225	5%	208	6%	10	2%	7	5%
9 years	238	6%	215	6%	12	2%	11	8%
10 years	233	5%	215	6%	14	3%	4	3%
11 years	284	6%	263	7%	13	3%	8	6%
12 years	247	6%	220	6%	24	5%	3	2%
13 years	240	6%	219	6%	17	4%	4	3%
14 years	262	6%	231	6%	29	6%	2	1%
15 years	272	6%	235	6%	36	8%	1	*
16 years	335	8%	265	7%	70	15%	–	–
17 years	580	13%	452	12%	128	27%	–	–
18 years	165	4%	120	3%	45	10%	–	–
19 & over	117	2%	81	2%	36	8%	–	–
Unknown or Not Reported	25	*	23	*	2	*	–	–

* Less than 1%

TABLE B: Number and Percentage Distribution of Hearing Impaired Children in Texas by Sign Language Use, 1981-82

SIGN LANGUAGE USE	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
Instructional Program Uses Sign Language	3450	79%	2978	79%	470	99%	2	1%
Instructional Program Does Not Use Sign Language	900	21%	759	20%	---	---	141	99%
Unknown or Not Reported	13	*	12	*	1	*	---	---
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
Sign Language Used at Home	1607	37%	1388	37%	216	46%	3	2%
Sign Language Not Used at Home	2586	59%	2233	60%	213	45%	140	98%
Unknown or Not Reported	170	4%	128	3%	42	9%	---	---

* Less than 1%

TABLE C: Number and Percentage Distribution of Hearing Impaired Children in Texas by Language Spoken at Home, 1981-82

LANGUAGE SPOKEN AT HOME	Total N	Total %	Regional Day School Programs N	Regional Day School Programs %	Texas School for the Deaf N	Texas School for the Deaf %	Other N	Other %
TOTAL CHILDREN	4363	*	3749	*	471	*	143	*
English	3687	84%	3129	83%	416	88%	142	99%
Spanish	859	20%	776	21%	58	12%	25	17%
American Sign Language	130	3%	99	3%	30	6%	1	**
Other	41	**	39	1%	2	**	---	---
Data Not Available	1	**	1	**	---	---	---	---

* Percents do not total 100 because some children were reported to use more than one language at home.

** Less than 1%

TABLE D: Number and Percentage Distribution of Hearing Impaired Children in Texas by Recency of Audiological Exam, 1981-82

RECENCY OF EXAM	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
1982	217	4%	170	4%	12	2%	35	24%
1981	1556	36%	1444	38%	60	13%	52	36%
1980	1142	26$	1031	28%	91	19%	20	14%
1979	839	19%	573	15%	255	54%	11	8%
1978	331	8%	287	8%	22	5%	22	15%
1977 or earlier	165	4%	144	4%	19	4%	2	1%
Unknown or Not Reported	113	3%	100	3%	12	2%	1	*

*Less than 1%

TABLE E: Number and Percentage Distribution of Hearing Impaired Children in Texas by Degree of Hearing Loss, 1981-82

DEGREE OF HEARING LOSS	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
< 27 dB	71	2%	69	2%	---	--	2	1%
Mild (27-40 dB)	178	4%	173	5%	2	*	3	2%
Moderate (41-55 dB)	384	9%	367	10%	1	*	16	11%
Moderate-Severe (56-70 dB)	588	14%	555	15%	12	2%	21	15%
Severe (71-90 dB)	1055	24%	915	24%	107	23%	33	23%
Profound (91 dB & above)	2044	47%	1628	43%	348	74%	68	48%
Unknown or Not Reported	43	*	42	1%	1	*	---	--

* Less than 1%

TABLE F: Number and Percentage Distribution of Hearing Impaired Children in Texas by Current Hearing Aid Usage, 1981-82

CURRENT HEARING AID USAGE	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
Currently Wear Personal Aid	3666	84%	3145	84%	386	82%	135	94%
Do Not Use Personal Aid	665	15%	580	15%	77	16%	8	5%
Unknown or Not Reported	32	*	24	*	8	2%	--	--

* Less than 1%

TABLE G: Number and Percentage Distribution of Hearing Impaired Children in Texas by Parental Hearing Status, 1981-82

PARENTAL HEARING STATUS	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
Both Parents Deaf	120	3%	72	2%	48	10%	--	--
Only One Parent Deaf	132	3%	120	3%	9	2%	3	2%
Neither Parent Deaf	4031	92%	3507	94%	386	82%	138	97%
Data Not Available	80	2%	50	1%	28	6%	2	1%

TABLE H: Number and Percentage Distribution of Hearing Impaired Children in Texas by Source of State Funding for Services, 1981-82

SOURCE OF STATE FUNDING	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	**	3749	**	471	**	143	**
Regional Day School for the Deaf	3606	83%	3591	96%	1	**	14	10%
Texas School for the Deaf	596	14%	595	16%	---	--	1	*
Local School District	2	*	2	*	---	--	---	--
Basic Special Education	469	11%	2	*	467	99%	---	--
Texas Dept. of MH & R	445	10%	445	12%	---	--	---	--
Other	184	4%	95	2%	1	*	88	61%
Unknown or Not Reported	97	2%	40	1%	2	*	55	38%

* Less than 1%

** Percents may add to more than 100 because multiple funding sources were reported for some children.

TABLE I: Number and Percentage Distribution of Hearing Impaired Children in Texas by Ethnic Origin, 1981-82

ETHNIC ORIGIN	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
White	2305	53%	1924	51%	295	63%	86	60%
Black	809	19%	705	19%	95	20%	9	6%
Hispanic American	1154	26%	1033	28%	76	16%	45	31%
American Indian	8	*	7	*	1	*	---	--
Oriental	28	*	27	*	1	*	---	--
Other	29	*	27	*	1	*	1	*
Multi-Ethnic	21	*	18	*	1	*	2	1%
Unknown or Not Reported	9	*	8	*	1	*	---	--

* Less than 1%

TABLE J: Number and Percentage Distribution of Hearing Impaired Children in Texas by Texas Statewide Curriculum for the Deaf, 1981-82

TEXAS STATEWIDE CURRICULUM FOR THE DEAF	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
Child Receives Instruction with TSCD	3706	85%	3372	90%	334	71%	---	--
Child Does Not Receive Instruction with TSCD	605	14%	333	9%	129	27%	143	100%
Unknown or Not Reported	52	1%	44	1%	8	2%	---	--

TABLE K: Number and Percentage Distribution of Hearing Impaired Children in Texas by Residence While at School, 1981-82

RESIDENCE	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
Child Lives at Home	3866	89%	3628	97%	100	21%	138	96%
Child Lives at School	365	8%	7	*	358	76%	---	--
Child Lives at Group or Foster Home	64	1%	61	2%	2	*	1	*
Unknown or Not Reported	68	2%	53	1%	11	2%	4	3%

* Less than 1%

TABLE L: Number and Percentage Distribution of Hearing Impaired Children in Texas by Age at Onset of Hearing Loss, 1981-82

AGE AT ONSET OF HEARING LOSS	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
At Birth	2686	62%	2242	60%	358	76%	86	60%
Under 1 year	447	10%	395	11%	42	9%	10	7%
1 year	270	6%	220	6%	36	8%	14	10%
2 years	205	5%	175	5%	18	4%	12	8%
3 years	113	3%	96	3%	7	2%	10	7%
4 years	57	1%	52	1%	1	*	4	3%
5 years	50	1%	46	1%	2	*	2	1%
6 years	16	*	16	*	---	--	---	--
7 years & over	38	*	17	*	1	*	---	--
Unknown or Not Reported	481	11%	470	12%	6	1%	5	3%

* Less than 1%

TABLE M: Number and Percentage Distribution of Hearing Impaired Children in Texas by Additional Handcapping Conditions, 1981-82

ADDITIONAL HANDICAPPING CONDITIONS	Total N	Total %	Regional Day School Programs N	Regional Day School Programs %	Texas School for the Deaf N	Texas School for the Deaf %	Other N	Other %
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
NO ADDITIONAL HANDICAPS	3256	75%	2830	75%	297	63%	129	90%
ONE OR MORE ADDITIONAL HANDICAPS	1057	24%	887	24%	156	33%	14	10%
Unknown or Not Reported	50	1%	32	*	18	4%	---	--
TOTAL CONDITIONS	1441	--	1196	--	220	--	25	--
Legal Blindness	65	2%	59	2%	6	1%	--	--
Uncorrected Visual Problem	139	3%	100	3%	34	8%	5	3%
Minimal Brain Injury	51	1%	44	1%	4	*	3	2%
Epilepsy (Convulsive Disorder)	40	*	30	*	9	2%	1	*
Orthopedic	102	2%	95	3%	4	*	3	2%
Cerebral Palsy	122	3%	107	3%	13	3%	2	1%
Heart Disorder	79	2%	65	2%	10	2%	4	3%
Other Health Impaired	133	3%	125	3%	5	1%	3	2%
Mental Retardation	270	6%	230	6%	39	9%	1	*
Emotional or Behavioral Problems	174	4%	104	3%	69	15%	1	*
Specific Learning Disability	195	4%	172	4%	23	5%	--	--
Other	71	2%	65	2%	4	*	2	1%

* Less than 1%

TABLE N: Number and Percentage Distribution of Hearing Impaired Children in Texas by Reason for Incomplete Audiological Results, 1981-82

REASON	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
Complete Test Results Given	3858	88%	3287	88%	452	96%	119	83%
Incomplete Test Results	505	12%	462	12%	19	4%	24	17%
Child not Tested	14	3%	14	3%	---	--	---	--
Child Tested, Results Not In File	43	9%	42	9%	1	5%	---	--
Unsuccessful Attempt to Test	211	42%	193	42%	6	32%	12	50%
Other Reason	122	24%	11	24%	---	--	11	46%
Unknown or Not Reported	115	23%	102	22%	12	63%	1	4%

TABLE O: Number and Percentage Distribution of Hearing Impaired Children in Texas by Cause of Hearing Loss, 1981-82

CAUSE OF HEARING LOSS	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
Information Not Reported	1509	35%	1314	35%	124	26%	71	50%
Information Reported	2854	65%	2435	65%	347	73%	72	50%
CAUSES AT BIRTH **								
Maternal Rubella	755	26%	581	24%	165	48%	9	12%
Trauma at Birth	143	5%	136	6%	3	*	4	6%
Heredity	386	14%	330	14%	46	13%	10	14%
Prematurity	166	6%	153	6%	13	4%	---	--
Cytomegalovirus	24	*	23	*	1	*	---	--
Rh Incompatability	134	5%	124	5%	6	2%	4	6%
Other Complications of Pregnancy	270	9%	231	9%	27	8%	12	17%
Other	131	5%	119	5%	9	3%	3	4%
CAUSES AFTER BIRTH **								
Meningitis	418	15%	356	15%	41	12%	21	29%
High Fever	228	8%	211	9%	15	4%	2	3%
Mumps	17	*	15	*	2	*	---	--
Infections	133	5%	125	5%	5	1%	3	4%
Measles	58	2%	49	2%	8	2%	1	1%
Otitis Media	83	3%	78	3%	5	1%	---	--
Trauma	51	2%	46	2%	5	1%	---	--
Other	123	4%	110	4%	10	3%	3	4%

* Less than 1%

** Percentage distribution of specific causes are calculated from known information. Percents will not total 100 because multiple causes were reported for some students.

TABLE P: Number and Percentage Distribution of Hearing Impaired Children in Texas by Educational Services, 1981-82

EDUCATIONAL SERVICES	Total		Regional Day School Programs		Texas School for the Deaf		Other	
	N	%	N	%	N	%	N	%
TOTAL CHILDREN	4363	100%	3749	100%	471	100%	143	100%
Special Education Services Only	2012	46%	1493	40%	459	97%	60	42%
Special Education - Unknown if any regular classroom instruction	21	*	15	*	6	1%	---	--
Regular Classroom Instruction Only	508	12%	491	13%	---	--	17	12%
Regular Classroom - Unknown if any special education	6	*	6	*	---	--	---	--
Both Regular Classroom and Special Ed.	1523	35%	1462	39%	5	1%	56	39%
No Regular Classroom Instruction and No Special Education Svcs.	258	6%	250	7%	---	--	8	6%
No Special Ed. - Unknown if any regular classroom instruction	2	*	2	*	---	--	---	--
No Regular Classroom Instruction -Unknown if any special education	10	*	8	*	---	--	2	1%
Unknown Services	23	*	22	*	1	*	---	--

* Less than 1%

TABLE Q: Number and Percentage Distribution of Hearing Impaired Children in Texas Who Withdrew from Programs by Reason for Withdrawal, 1981-80

REASON FOR WITHDRAWAL	Total N	Total %	Regional Day School Programs N	Regional Day School Programs %	Texas School for the Deaf N	Texas School for the Deaf %	Other N	Other %
TOTAL WITHDRAWALS	876	100%	759	100%	73	100%	44	100%
Completed Instructional Program	163	19%	122	16%	41	56%	--	--
Moved from Area	228	26%	212	28%	8	11%	8	18%
Parental Decision to Change	173	20%	144	19%	13	18%	16	36%
School Initiated Transfer	90	10%	76	10%	1	1%	13	30%
Dropped Out	55	6%	46	6%	9	12%	--	--
Other Reason	108	12%	107	14%	1	1%	--	--
Unknown	59	7%	52	7%	--	--	7	16%

TABLE R: Number and Percentage Distribution of Hearing Impaired Children in Texas by Classroom Settings for Regional Day School for the Deaf Programs

CLASSROOM SETTINGS FOR RDSD PROGRAMS	TOTAL		HOURS PER WEEK							
			5 hrs or less		6-10 hours		11-15 hours		Hrs not reported	
	N	%	N	%	N	%	N	%	N	%
TOTAL CHILDREN	3726	100%								
FULL-TIME RDSD	2398	64%								
PART-TIME RDSD**	1288	35%								
OTHER	26	1%								
Unknown Program	14	*								
PART-TIME RDSD**	1288									
- Class for the Hearing Impaired	592	100%	169	29%	133	22%	276	47%	14	2%
- Basic Special Education Class	297	100%	85	39%	60	27%	143	65%	9	4%
- Regular Classes for Hearing Students	795	100%	120	16%	120	16%	521	71%	34	5%
- Class for Multiply Handicapped	39	100%	1	3%	4	11%	31	82%	3	8%
- Parent/Infant Program	194	100%	170	88%	11	6%	2	1%	11	6%
- Itinerant Services	467	100%	439	94%	12	3%	8	1%	8	1%

** Excludes 23 children whose ages were not reported.

TABLE 5: Number and Percentage Distribution of Hearing Impaired Children in Texas by Support Services When Integrated with Hearing Students, 1981-82

SUPPORT SERVICES	*Total*		*Regional Day School Programs*		*Texas School for the Deaf*		*Other*	
	N	*%*	*N*	*%*	*N*	*%*	*N*	*%*
TOTAL CHILDREN	*4363*	*100%*	*3749*	*100%*	*471*	*100%*	*143*	*100%*
NOT INTEGRATED WITH HEARING STUDENTS	*2280*	*52%*	*1751*	*47%*	*459*	*98%*	*70*	*49%*
INTEGRATED WITH HEARING STUDENTS	*2037*	*47%*	*1959*	*52%*	*5*	*1%*	*73*	*51%*
Unknown or Not Reported	*46*	*1%*	*39*	*1%*	*7*	*1%*	*--*	*--*
INTEGRATED WITH HEARING STUDENTS	*2037*	****	*1959*	****	*5*	****	*73*	****
- No Support Services	*729*	*36%*	*715*	*36%*	*--*	*--*	*44*	*30%*
- Interpreters	*739*	*36%*	*739*	*38%*	*--*	*--*	*--*	*--*
- Notetaker	*97*	*5%*	*96*	*5%*	*--*	*--*	*1*	*1%*
- Tutor or Special Aide	*348*	*17%*	*333*	*17%*	*--*	*--*	*15*	*10%*
- Other	*299*	*15%*	*255*	*13%*	*--*	*--*	*44*	*60%*
- Unknown Services	*58*	*3%*	*41*	*2%*	*5*	*100%*	*12*	*8%*

*** Percents may not total 100 because multiple services were reported for some children.*

TABLE T: NUMBER AND PERCENTAGE DISTRIBUTION OF DEMOGRAPHIC CHARACTERISTICS OF HEARING IMPAIRED STUDENTS IN TEXAS, 1981-82

AGE	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PER
TAL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	10
NFORMATION NOT REPORTED	3	0.6	5	1.2	2	0.2	10	0.9	3	0.4	2	
OTAL KNOWN INFORMATION	471	100.0	420	100.0	1006	100.0	1064	100.0	765	100.0	612	10
UNDER 3 YEARS	29	6.2	23	5.5	53	5.3	43	4.0	20	2.6	36	
FROM 3 TO 5 YEARS	51	10.8	55	13.1	131	13.0	156	14.7	90	11.8	60	
FROM 6 TO 9 YEARS	95	20.2	74	17.6	226	22.5	216	20.3	163	21.3	82	1
FROM 10 TO 13 YEARS	126	26.8	109	26.0	237	23.6	254	23.9	191	25.0	87	1
FROM 14 TO 17 YEARS	140	29.7	136	32.4	330	32.8	342	32.1	235	30.7	266	4
18 YEARS AND OVER	30	6.4	23	5.5	29	2.9	53	5.0	65	8.6	81	1

SEX	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PER
AL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	10
LE	243	51.3	222	52.2	534	53.0	564	52.5	387	50.4	340	5
MALE	231	48.7	203	47.8	474	47.0	498	46.4	381	49.6	274	4
KNOWN OR BLANK	0	0.0	0	0.0	0	0.0	12	1.1	0	0.0	0	(

ETHNIC ORIGIN	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERC
AL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100
FORMATION NOT REPORTED	2	0.4	2	0.5	1	0.1	2	0.2	1	0.1	1	0
TAL KNOWN INFORMATION	472	100.0	423	100.0	1007	100.0	1072	100.0	767	100.0	613	100
HITE	233	49.4	298	70.4	634	63.0	535	49.9	224	29.2	381	62
LACK OR NEGRO	34	7.2	46	10.9	261	25.9	317	29.6	47	6.1	104	17
ISPANIC-AMERICAN	191	40.5	72	17.0	91	9.0	193	18.0	486	63.4	121	19
MERICAN INDIAN	0	0.0	0	0.0	4	0.4	3	0.3	0	0.0	1	0
RIENTAL	8	1.7	1	0.2	8	0.8	6	0.6	4	0.5	1	0
THER	3	0.6	4	0.9	6	0.6	12	1.1	2	0.3	2	0
ULTI-ETHNIC BACKGROUND INDICATED	3	0.6	2	0.5	3	0.3	6	0.6	4	0.5	3	0

TABLE V: NUMBER AND PERCENTAGE DISTRIBUTION OF DEMOGRAPHIC CHARACTERISTICS OF HEARING IMPAIRED STUDENTS IN TEXAS, 1981-82

SOURCE OF EDUCATIONAL FUNDING	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100.0
INFORMATION NOT REPORTED	0	0.0	12	2.8	2	0.2	16	1.5	10	1.3	57	9.3
TOTAL KNOWN INFORMATION	474	100.0	413	100.0	1006	100.0	1058	100.0	758	100.0	557	100.0
REGIONAL DAY SCHOOL	416	87.8	171	41.4	824	81.9	747	70.6	664	87.6	1	0.2
SPECIAL EDUCATION	0	0.0	0	0.0	0	0.0	0	0.0	1	0.1	457	83.3
TEXAS SCHOOL FOR THE DEAF	5	1.1	5	1.2	0	0.0	46	4.3	8	1.1	0	0.0
T.D.M.H.M.R.	2	0.4	4	1.0	0	0.0	17	1.6	5	0.7	0	0.0
LOCAL SCHOOL DISTRACT	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
OTHER	0	0.0	0	0.0	0	0.0	20	1.9	0	0.0	74	13.3
MULTIPLE FUNDING SOURCE INDICATED	51	10.8	233	56.4	182	18.1	228	21.6	80	10.6	15	2.7

LANGUAGE SPOKEN IN HOME	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100.0
INFORMATION NOT REPORTED	4	0.8	2	0.5	5	0.5	8	0.7	3	0.4	4	0.7
TOTAL KNOWN INFORMATION	470	100.0	423	100.0	1003	100.0	1066	100.0	765	100.0	610	100.0
ENGLISH	298	63.4	357	84.4	908	90.5	900	84.4	363	47.5	495	81.1
SPANISH	107	22.8	34	8.0	42	4.2	95	8.9	279	36.3	37	6.1
AMERICAN SIGN LANGUAGE	5	1.1	2	0.5	2	0.2	4	0.4	10	1.3	14	2.3
OTHER	3	0.6	0	0.0	2	0.2	7	0.7	1	0.1	1	0.2
MULTIPLE LANGUAGES	57	12.1	30	7.1	49	4.9	60	5.6	113	14.8	63	10.3

SIGN LANGUAGE USE BY STUDENT	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100.0
INFORMATION NOT REPORTED	1	0.2	1	0.2	1	0.1	9	0.8	2	0.3	0	0.0
TOTAL KNOWN INFORMATION	473	100.0	424	100.0	1007	100.0	1065	100.0	766	100.0	614	100.0
STUDENTS USE SIGN LANGUAGE	276	58.4	338	79.7	714	70.9	821	77.1	588	76.8	464	75.6
STUDENTS DO NOT USE SIGN LANGUAGE	197	41.6	86	20.3	293	29.1	244	22.9	178	23.2	150	24.4

TABLE U: NUMBER AND PERCENTAGE DISTRIBUTION OF DEMOGRAPHIC CHARACTERISTICS OF HEARING IMPAIRED STUDENTS IN TEXAS, 1981-82

DEGREE OF HEARING LOSS	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
L STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100.0
ORMATION NOT REPORTED	2	0.4	5	1.2	6	0.6	21	2.0	8	1.0	1	0.2
AL KNOWN INFORMATION	472	100.0	420	100.0	1002	100.0	1053	100.0	760	100.0	613	100.0
RMAL (UNDER 27 DB)	10	2.1	6	1.4	22	2.2	17	1.6	14	1.8	2	0.3
LD (FROM 27 TO 40 DB)	39	8.3	15	3.5	57	5.7	23	2.2	39	5.1	5	0.8
DERATE (FROM 41 TO 55 DB)	63	13.3	45	10.7	112	11.2	82	7.8	65	8.6	17	2.8
DERATE SEVERE (FROM 56 TO 70 DB)	68	14.4	87	20.7	133	13.3	152	14.4	115	15.1	33	5.4
VERE (FROM 71 TO 90 DB)	102	21.6	107	25.5	240	24.0	261	24.8	205	27.0	140	22.8
OFOUND (91 DB AND ABOVE)	190	40.3	160	38.1	438	43.7	518	49.2	322	42.4	416	67.9

CURRENT HEARING AID USE	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
L STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100.0
ORMATION NOT REPORTED	31	6.5	29	6.8	74	7.3	50	4.7	100	13.0	40	6.5
AL KNOWN INFORMATION	443	100.0	396	100.0	934	100.0	1024	100.0	668	100.0	574	100.0
RRENTLY WEAR AID	409	92.3	349	88.1	871	93.3	941	91.9	575	86.1	521	90.8
NOT CURRENTLY WEAR AID	34	7.7	47	11.9	63	6.7	83	8.1	93	13.9	53	9.2

E AT ONSET OF HEARING LOSS	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
L STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100.0
ORMATION NOT REPORTED	48	10.1	35	8.2	118	11.7	169	15.7	100	13.0	11	1.8
AL KNOWN INFORMATION	426	100.0	390	100.0	890	100.0	905	100.0	668	100.0	603	100.0
SET AT BIRTH	299	70.2	270	69.2	607	68.2	617	68.2	449	67.2	444	73.6
LESS 1 YEAR	45	10.6	60	15.4	112	12.6	94	10.4	83	12.4	52	8.6
YEAR	32	7.5	21	5.4	58	6.5	64	7.1	45	6.7	50	8.3
YEARS	17	4.0	14	3.6	52	5.8	54	6.0	38	5.7	30	5.0
YEARS	13	3.1	13	3.3	18	2.0	29	3.2	23	3.4	17	2.8
OM 4 TO 6 YEARS	10	2.3	8	2.1	32	3.6	41	4.5	23	3.4	9	1.5
YEARS AND OVER	9	2.1	4	1.0	11	1.2	6	0.7	7	1.0	1	0.2

TABLE W: NUMBER AND PERCENTAGE DISTRIBUTION OF DEMOGRAPHIC CHARACTERISTICS OF HEARING IMPAIRED STUDENTS IN TEXAS, 1981-82

ROBABLE CAUSE OF HEARING LOSS	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCE
OTAL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100.
INFORMATION NOT REPORTED	124	26.2	105	24.7	421	41.8	377	35.1	287	37.4	195	31.
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCE
*** CAUSES AT BIRTH ****												
MATERNAL RUBELLA	47	13.2	57	17.9	157	26.7	204	29.2	116	23.9	174	41.
TRAUMA AT BIRTH	31	8.7	22	6.9	32	5.4	35	5.0	16	3.3	7	1.
OTHER COMPLICATIONS OF PREGNANCY	50	14.0	43	13.4	45	7.6	51	7.3	42	8.7	39	9.
HEREDITY	76	21.3	38	11.8	69	11.7	77	11.0	70	14.4	56	13.
PREMATURITY	13	3.6	14	4.4	34	5.8	65	9.3	27	5.6	13	3.
CYTOMEGALOVIRUS	0	0.0	4	1.2	6	1.0	10	1.4	3	0.6	1	0.
RH INCOMPATIBILITY	32	9.0	44	13.7	13	2.2	21	3.0	14	2.9	10	2.
OTHER	12	3.4	14	4.4	34	5.8	33	4.7	26	5.4	12	2.
*** CAUSES AFTER BIRTH ****												
MENINGITIS	39	10.9	41	13.4	105	17.8	109	15.6	60	12.4	62	14.
HIGH FEVER	29	8.1	27	8.4	44	7.5	47	6.7	64	13.2	17	4.
MUMPS	1	0.3	1	0.3	5	0.8	4	0.6	4	0.8	2	0.
INFECTIONS	17	4.8	14	4.4	42	7.1	29	4.2	23	4.7	8	1.
MEASLES	5	1.4	5	1.6	11	1.9	11	1.6	17	3.5	9	2.
OTITIS MEDIA	9	2.5	12	3.7	23	3.9	20	2.9	14	2.9	5	1.
TRAUMA AFTER BIRTH	9	2.5	6	1.9	8	1.4	10	1.4	13	2.7	5	1.
OTHER	21	5.9	15	4.7	25	4.2	31	4.4	18	3.7	13	3.

ADDITIONAL HANDICAPPING CONDITIONS	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCE
TOTAL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100.
INFORMATION NOT REPORTED	0	0.0	1	0.2	2	0.2	25	2.3	4	0.5	18	2.
TOTAL KNOWN INFORMATION	474	100.0	424	100.0	1006	100.0	1049	100.0	764	100.0	596	100.
NUMBER W/ NO ADDITIONAL HANDICAPS	322	67.9	320	75.5	780	77.5	792	75.5	616	80.6	426	71.
TOTAL W/1 OR MORE ADDITIONAL HCPS	152	32.1	104	24.5	226	22.5	257	24.5	148	19.4	170	28.
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCE
LEGAL BLINDNESS	6	1.3	5	1.2	10	1.0	28	2.7	10	1.3	6	1.
UNCORRECTED VISUAL PROBLEM	7	1.5	10	2.4	22	2.2	32	3.1	29	3.8	39	6.
MINIMAL BRAIN INJURY	12	2.5	5	1.2	6	0.6	16	1.5	5	0.7	7	1.
EPILEPSY (CONVULSIVE DISORDER)	4	0.8	8	1.9	4	0.4	8	0.8	6	0.8	10	1.
ORTHOPEDIC	16	3.4	14	3.3	26	2.6	28	2.7	11	1.4	7	1.
CEREBRAL PALSY	11	2.3	13	3.1	25	2.5	43	4.1	15	2.0	15	2.
HEART DISORDER	7	1.5	15	3.5	6	0.6	24	2.3	13	1.7	14	2.
OTHER HEALTH IMPAIRED	32	6.8	17	4.0	25	2.5	33	3.1	18	2.4	8	1.
MENTAL RETARDATION	22	4.6	29	6.8	72	7.2	86	8.2	21	2.7	40	6.
EMOTIONAL OR BEHAVIORAL PROBLEMS	21	4.4	9	2.1	26	2.6	24	2.3	24	3.1	70	11.
SPECIFIC LEARNING DISABILITY	34	7.2	21	5.0	54	5.4	24	2.3	39	5.1	23	3.
OTHER	19	4.0	12	2.8	9	0.9	9	0.9	16	2.1	6	1.

* SEE INFORMATION SHEET FOR METHOD OF CALCULATING ABOVE PERCENTAGES (PROBABLE CAUSE OF HEARING LOSS / ADDITIONAL HCP CONDITIONS

TABLE X: NUMBER AND PERCENTAGE DISTRIBUTION OF DEMOGRAPHIC CHARACTERISTICS OF HEARING IMPAIRED STUDENTS IN TEXAS, 1981-82

SIGN LANGUAGE USE IN CLASS	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERC
OTAL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100
INFORMATION NOT REPORTED	0	0.0	1	0.2	1	0.1	9	0.8	1	0.1	1	0
TOTAL KNOWN INFORMATION	474	100.0	424	100.0	1007	100.0	1065	100.0	767	100.0	613	100
STUDENTS USE SIGN IN CLASS	313	66.0	381	89.9	777	77.2	864	81.1	643	83.8	472	77
STUDENTS DON'T SIGN IN CLASS	151	34.0	43	10.1	230	22.8	201	18.9	124	16.2	141	23

SIGN LANGUAGE USE BY FAMILY	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERC
OTAL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	100
INFORMATION NOT REPORTED	5	1.1	8	1.9	18	1.8	59	5.5	38	4.9	42	6
TOTAL KNOWN INFORMATION	469	100.0	417	100.0	990	100.0	1015	100.0	730	100.0	572	100
FAMILY USES SIGN LANGUAGE	144	30.7	205	49.2	453	45.8	346	34.1	240	32.9	219	38
FAMILY DOES NOT USE SIGN LANGUAGE	325	69.3	212	50.8	537	54.2	669	65.9	490	67.1	353	61

PARENTAL HEARING STATUS	CLUSTER A		CLUSTER B		CLUSTER C		CLUSTER D		CLUSTER E		CLUSTER S	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERC
OTAL STUDENTS	474	100.0	425	100.0	1008	100.0	1074	100.0	768	100.0	614	10
INFORMATION NOT REPORTED	14	3.0	5	1.2	8	0.8	18	1.7	5	0.7	30	4
TOTAL KNOWN INFORMATION	460	100.0	420	100.0	1000	100.0	1056	100.0	763	100.0	584	10
BOTH PARENTS NORMAL HEARING	422	91.7	398	94.8	949	94.9	1013	95.9	725	95.0	524	89
ONLY ONE PARENT DEAF	31	6.7	15	3.6	25	2.5	21	2.0	28	3.7	12	2
BOTH PARENTS DEAF	7	1.5	7	1.7	26	2.6	22	2.1	10	1.3	48	8

THIS REPORT WAS PREPARED BY THE

CENTER FOR ASSESSMENT AND DEMOGRAPHIC DEMOGRAPHIC STUDIES
GALLAUDET COLLEGE
WASHINGTON, D. C. 20002

AS PART OF THE
TEXAS SURVEY OF HEARING IMPAIRED CHILDREN & YOUTH

FOR QUESTIONS OR FURTHER INFORMATION, CONTACT C.A.D.S. AT
202-651-5300

APPENDIX 3

Content Analysis of SAT-HI in Relationship to Texas Statewide Curriculum

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 1 - Math Concepts

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1	1:A1.a 1:D1.a	.98	.96
2	1:D1.a	.94	.88
3	1:D1.a	.84	.78
4	1:D1.a	.57	.82
5	1:D3.a	.42	.84
6	1:C1.a	.59	.59
7	1:C1.b	.86	.85
8	1:D1.a	.78	.59
9	1:C1.a	.34	.74
10	1:D1.a 1:D3.a	.56	.48
11*		.63	.75
12	1:B2.c	.89	.92
13	1:D1.a	.48	.68
14	1:C6.c	.22	.31
15	2:B4 2:D1.b	.16	.50
16	2:B1.b 2:B7.b	.85	.64
17*	(possibly 2:C)	.60	.58
18*	(possibly 2:C)	.55	.57
19	2:B2.b	.42	.50
20	2:C6.c	.65	.60
21	2:A5.a	.28	.59
22	3:C6.a	.50	.47
23	2:C6.a	.88	.97
24*		.59	.33
25	2:A5.a	.19	.56
26	2:B1.a	.50	.54
27	2:B1.b	.35	.47
28	2:C6.b	.34	.54
29*	(possibly 2:C)	.16	.40
30	2:A2.a	.61	.33
31	2:A1.c 2:A5.a	.62	.49
32*		.28	.42

*Items which do not seem to test any of the Texas Math Curriculum objectives:

11, (17), (18), 24, (29), and 32.

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 1 - Math Computation/Applications

		ITEM DIFFICULTY				ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample	ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1*	3:A6 3:A7 3:B8 3:D6.b	.69	.77	16	2:B2.a	.89	.87
2*		.63	.82	17	2:B2.a	.89	.74
3*		.33	.79	18	2:B2.c	.89	.75
4*		.55	.58	19	2:B2.c	.86	.72
5*		.29	.85	20	2:B2.c	.83	.80
6*		.47	.48	21	2:B2.c	.86	.77
7*		.18	.54	22	2:B2.c	.86	.76
8*		.51	.45	23	2:B2.c	.63	.73
9*		.59	.53	24	2:B2.c	.82	.64
10*		.18	.44	25	2:B2.a	.50	.49
11*		.30	.49	26	2:B2.a	.52	.49
12*		.13	.69	27	2:B2.b	.86	.62
13*		.20	.33	28	2:B2.b	.80	.66
14*		.16	.50	29	2:B2.b	.87	.54
15	2:B2.a	.95	.85	30	2:B2.b	.83	.56
				31	2:B2.c	.88	.71
				32	2:B2.c	.37	.33

* Items 1-14 each test Objectives 3:A6, 3:A7, 3:B8, and 3:D6.b.

Texas Math Curriculum Objectives Listed by SAT-HI Items
and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 2 - Math Concepts

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1	2:A1.a.2	.97	.93
2	2:D1.a	.88	.89
3	2:A5.b	.61	.63
4	2:A1.b 2:B1.a 2:C6.a	.85	.81
5	2:A1.b 2:B1.a 2:C6.a	.81	.71
6	2:D3 2:D6.b 2:A5.b	.89	.84
7	2:A5.a 2:A1.b	.81	.78
8	3:A12	.44	.64
9	2:A1.a.1	.76	.77
10*		.29	.74
11	1:D4 2:C6.a	.69	.56
12	2:A2.a	.29	.68
13	3:C1.a	.58	.67
14	2:D1.a	.71	.67
15	2:C1.a 2:C2	.35	.71
16	2:B3	.32	.67
17	2:B3	.70	.69
18	3:D6.b	.38	.62
19	3:A1.a 3:D1.a	.83	.63
20*		.46	.57
21	3:B2.d 3:D1.a	.29	.64
22	2:B3 or 3:B3	.61	.50
23	2 or 3:B3 2 or 3:B2.a	.76	.66
24	3:A12	.57	.51
25	2:A2.b	.32	.47
26	3:A12	.45	.55
27*		.41	.36
28	2:B1.a	.73	.51
29	2:B1.a	.44	.29
30	3:C5	.93	.80
31	3:C5	.28	.43
32	3:A12	.55	.61
33	2:A1.c	.27	.38
34	2 or 3:B2.b 2 or 3:B3	.69	.58
35	3:B2.a	.57	.43

*Items which do not seem to test any of the Texas Math Curriculum objectives: 10, 20, and 27.

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 2 - Math Computation

ITEMS	OBJECTIVES Stage: Content	ITEM DIFFICULTY	
		Texas HI	Hearing Norm Sample
1*	3:B4.a 3:B4.b	.89	.81
2*		.92	.85
3*		.83	.73
4*		.85	.81
5*		.79	.73
6*		.87	.81
7*		.81	.70
8*		.75	.69
9*		.79	.66
10*		.77	.70
11*		.77	.75
12*		.60	.59
13*		.74	.65
14*		.52	.48
15*		.65	.49
16*		.69	.55
17*		.65	.48
18*		.64	.50
19*		.72	.56
20*		.69	.57
21*		.52	.35
22*		.68	.53
23*		.53	.39
24*		.67	.50
25	3:B2.b	.96	.90
26	3:B2.b	.82	.72
27	3:B2.b	.66	.78
28	3:B2.d	.55	.44
29	3:B2.b	.74	.58
30	3:B2.d	.43	.36
31	3:B2.f	.67	.64
32	3:B2.e	.68	.50
33	3:B2.e	.57	.36
34	3:B2.g	.56	.37
35	3:B2.e	.59	.37
36	3:B2.e	.03	.22

* Items 1-24 each test Objectives 3:B4.a and 3:B4.b

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 2 - Math Applications

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1*	4:D6.a 4 or 5:D10	.74	.90
2*		.36	.46
3*		.39	.75
4*		.60	.64
5*		.62	.76
6*		.12	.53
7*		.18	.46
8*		.19	.56
9*		.40	.68
10*		.22	.58
11*		.10	.63
12*		.37	.76
13*		.20	.42
14*		.23	.63
15	3:C5	.44	.63
16	3:C5	.60	.66
17	3:C5	.57	.68
18	3:B9 3:C6.a	.20	.37
19	3:A5.a 3:B9	.59	.54
20	4:B2.j	.28	.47
21	3:A5.a 3:B9	.44	.49
22	3:B9 3:C6.c	.24	.49
23	3:C6.c 3:D3	.63	.83
24	3:C6.c 3:D3	.13	.57
25	3:C6.c 3:D3	.50	.44
26	3:D3	.63	.48
27	3:B3	.53	.64
28	3:B3	.24	.38

* Items 1-14 each test Objectives 4:D6.b and 4 or 5:D10

Texas Math Curriculum Objectives Listed by SAT-HI Items
and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 3 - Math Concepts

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1	4:A2.a	.91	.84
2	2 or 3:B3	.84	.70
3	2:A2.a 2:A5.a	.15	.28
4	3:D1.a	.84	.59
5	3:A1.a 3:A6 3:A7	.65	.59
6	2:A2.a 2:A5.a	.22	.44
7	2:B1.a	.88	.75
8	2:B3	.50	.73
9	2:B2.c 2:B2.a 2:D1.a 3:B3	.37	.66
10	4:C1	.71	.48
11	3:B3 3:B4.a 3:D1.b	.85	.51
12*		.57	.41
13	2:B2.a 2:B2.b	.39	.43
14	3:A2.a	.55	.65
15*		.37	.50
16	3:D1.a	.63	.49
17	2:C6.c	.28	.40
18	2:B1.a	.59	.40
19	3:A5.a 3:A5.b	.56	.60
20	2:C6.c 2:D3	.39	.69
21	3 or 4:B3	.81	.47
22	3:B3	.38	.34
23	2 or 3:A2.b 2 or 3:B1.c	.43	.71
24	3:B2.f	.52	.42
25	2:A1.c	.57	.56
26	2:C6.b 3:D3.b	.51	.57
27*		.45	.27
28	3:A5.b 3:B2.d	.66	.33
29	3 or 4:C2	.33	.45
30	4:C1 4:D1.b	.51	.60
31	2:A2.b	.73	.52
32	2:A2.b 2:A5.b	.23	.38

* *Items which do not seem to test any of the Texas Math Curriculum objectives: 12, 15, and 27.*

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 3 - Math Computation

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1	3:B4.a	.80	.76
2	3:B4.a	.77	.72
3	3:B4.b	.81	.69
4	3:B4.b	.84	.67
5	4:B4.a	.80	.75
6	4:B4.a	.67	.60
7	4:B4.a	.66	.59
8	4:B4.a	.75	.58
9	4:B4.a	.75	.59
10	4:B4.a	.73	.58
11	4:B4.a	.23	.33
12	3:B4.a 3:B3	.65	.58
13	3:B4.b 3:B3	.51	.45
14	4:A6 4:B7	.80	.66
15	4:A6	.61	.48
16	4:A6	.79	.60
17	3:C6.c	.74	.57
18	3:A2.b 3:B2.h	.52	.42
19	2:B2.h	.91	.78
20	3:B2.e	.86	.72
21	3:B2.a	.82	.70
22	3:B2.a	.87	.75
23	3:B2.e	.85	.64
24	3:B2.d	.70	.52
25	3:B2.d	.69	.56
26	3:B2.g	.79	.56
27	3:B2.f	.77	.52
28	3:B2.e	.85	.65
29	3:B2.d	.50	.38
30	3:B2.f	.64	.41
31	3:B2.f	.61	.35
32	3:B2.h	.44	.39
33	4:B2.e	.61	.40
34	3:B2.e	.60	.31
35	3:B2.e	.58	.30
36	3:B2.b	.67	.45
37	4:B2.d	.60	.36
38	4:B2.b	.68	.37
39	3:B2.f	.60	.36
40	3:B2.e	.53	.24

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 3 - Math Applications

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1*		.90	.91
2*		.83	.89
3*		.49	.70
4*		.83	.86
5*		.27	.70
6*		.66	.69
7*		.89	.74
8*		.63	.70
9*		.61	.74
10*		.51	.71
11*		.24	.59
12*		.33	.54
13*		.50	.49
14*		.32	.54
15*	3:A10	.11	.26
16*	3:A10	.21	.53
17*		.28	.45
18*		.23	.45
19*		.38	.65
20*		.28	.53
21*		.28	.61
22*		.31	.52
23*		.62	.54
24*		.51	.60
25*	3:A6	.42	.62
26*		.43	.54
27*		.27	.52
28*		.19	.46

* All the Level 3 Math Applications items test the following objectives:

3:D6.b, 3:B8, 3:A5.b, and 4:A5.a.

Certain items test other objectives also; these are noted on the table.

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 4 - Math Concepts

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1	5:A2.a	.71	.76
2	3:B3	.80	.85
3	3:B1	.66	.72
4	4:B1.b	.88	.82
5	3:B1	.82	.72
6	4:A2.a	.56	.71
7	4:A7	.80	.86
8	4:A2.a	.32	.70
9	3:B8	.52	.55
10	4:B4.f	.48	.77
11	3:C1.a	.30	.56
12	3:A2.b 4:B1.b	.56	.67
13	3 or 4:B3	.86	.73
14	3:B2.f	.71	.69
15*		.48	.59
16	4:C3	.70	.64
17	4:A.12 5:D1.a	.55	.55
18	4:B7	.55	.60
19	4:B4.a 4:B4.d 4:B4.e	.56	.75
20	3:A5.a	.25	.46
21	4:C1	.55	.55
22	4:B4.a	.58	.69
23	4:C1 4:C2	.36	.55
24*		.30	.58
25	3:B2.f	.32	.52
26	4:C1	.56	.55
27	5:A2.c.1	.36	.55
28	4:B1.b	.30	.33
29	4:C3	.36	.52
30	4:B1.b	.16	.46
31	4:D8	.56	.50
32	3:C7	.29	.34
33*		.38	.52
34	4:B2.j	.32	.43
35	4:B5	.60	.55

*Items which do not seem to test any of the Texas Math Curriculum objectives: 15, 24, and 33.

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 4 - Math Computation

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1*	4:B3 4:B4.a	.86	.86
2*		.93	.85
3*		.90	.82
4*		.78	.77
5*		.77	.75
6*		.81	.79
7*		.66	.65
8*		.64	.64
9*		.78	.74
10*		.77	.67
11*		.67	.66
12*		.59	.64
13*		.84	.80
14*		.84	.75
15*		.71	.69
16*		.41	.60
17*		.32	.56
18*		.38	.59
19*		.53	.67
20*		.56	.55
21*		.51	.48
22*		.37	.45
23*		.59	.55
24*	4:B3 4:B4.a	.58	.60
25	3:B2.e	.89	.75
26	4:B7	.75	.71
27	3:B2.d	.84	.73
28	4:B2.g	.80	.75
29	4:B2.g	.75	.70
30	3:B2.h	.34	.60
31	4:B2.g	.70	.70
32	4:B2.b	.74	.60
33	4:B2.c	.64	.65
34	3:B2.h	.63	.61
35	3:B2.e	.69	.58
36	3:B2.e	.56	.56
37	4:B7	.60	.48
38	4:D8	.41	.52
39	4:B2.d	.60	.52
40	4:B2.e	.49	.47
41	3:B2.e	.69	.58
42	3:B2.h	.67	.60
43	3:B2.g	.53	.45
44	3:B2.g	.49	.45
45	3 or 4:B2.h	.22	.44

* Items 1-24 test objectives 4:B3 and 4:B4.a.

Texas Math Curriculum Objectives Listed by SAT-HI Items
and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 4 - Math Applications

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1	4:A5.b 4:B8	.52	.80
2	4:A5.b 4:B8	.55	.86
3	4:A5.b 4:B8	.47	.77
4	4:A5.b 4:B8	.34	.60
5	4:A5.b 4:B8	.43	.74
6	4:B8 4:D1.b	.64	.90
7	4:B8 4:D1.b	.64	.82
8	4:B8 4:D1.b	.67	.88
9	4:A5.b 4:B8	.59	.78
10	4:A5.b 4:B8	.32	.74
11	4:A5.b 4:B8	.36	.54
12	4:A5.b 4:B8	.38	.64
13	4:D1.b	.64	.91
14	4:D1.b	.53	.77
15	4:D1.b	.16	.80
16	4:B8	.26	.67
17	4:B8	.59	.73
18	4:B8	.48	.73
19	4:B8	.29	.71
20	4:B8	.23	.46
21	4:B8	.44	.55
22	4:B8	.36	.60
23	4:B8	.14	.54
24	4:B8	.29	.59
25	4:B8	.38	.52
26	4:B8	.19	.52
27	4:A5.a 4:C6.a	.43	.69
28	4:D1.b	.25	.36
29	4:A6 4:B8	.41	.60
30	4:A10	.32	.52
31	4:B8	.41	.41
32	4:B8	.38	.49
33	4:B8	.29	.46
34	4:B8	.26	.36
35	4:B8	.36	.38
36	4:B8	.26	.38
37	4:B8	.29	.42
38	4:B8	.18	.39
39	4:B8	.33	.40
40	4:B8	.07	.26

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 5 - Math Concepts

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1	5:A9 5:B2.e 5:B5	.56	.68
2	3:D1.a	.50	.69
3	2:B1.a	.85	.85
4	5:A9 5:B5	.59	.69
5	5:B2.e 5:D8 4:B7	.41	.66
6	3:D2	.17	.59
7*		.52	.69
8	5:D8 4:B7	.37	.66
9	4:A2.b	.13	.53
10	4:B1.b	.26	.65
11	4:B3	.35	.59
12	4:B4.a	.41	.67
13	5:B5	.52	.51
14	4:D3 5:C8	.46	.49
15	3:B3	.35	.48
16*		.22	.45
17	5:A2.c.3	.70	.71
18	5:A10 5:A11	.46	.67
19	2:A1.c	.39	.73
20	5:D5	.44	.57
21	4:B2.i	.46	.68
22	4:B2.j 5:D1.b	.59	.70
23	4:B1.c	.61	.55
24	4:A11	.13	.58
25	4:B2.j	.37	.56
26	3:C1.a	.57	.80
27	5:C1 5:C2	.49	.70
28	3:D2 4:B2.g	.30	.55
29	3:D2 3:B2.f 5:D6	.44	.43
30*		.46	.50
31	3 or 4:C1.a	.57	.58
32	5:C3 5:C1	.20	.43
33	5:D6 5:D10	.28	.37
34	5:C5	.28	.32
35*	(possibly 5:D10, but no objective for concept of probability)	.20	.34

*Items which do not seem to test any of the Texas Math Curriculum objectives: 7, 16, 30, and (35).

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 5 - Math Computation

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1*	4:B4.a 4:D2	.78	.87
2*		.87	.91
3*		.76	.76
4*		.89	.84
5*		.61	.66
6*	5:A9	.65	.72
7*		.63	.65
8*		.57	.67
9*		.54	.69
10*		.61	.66
11*	5:B4.a	.61	.63
12*	4:B2.j	.37	.66
13*	4:B2.j	.61	.61
14*	4:B2.j	.26	.59
15*		.50	.59
16*		.50	.69
17*	5:A9	.44	.59
18*	5:B4.a	.50	.60
19*		.24	.54
20	3:B2.d	.80	.74
21	4:B2.g	.87	.86
22**		.46	.68
23	5:B2.b	.72	.71
24	5:A9	.85	.85
25	3:B2.h	.30	.60
26	3:B2.b	.78	.62
27	4:B2.e	.70	.65
28	3:B2.b	.76	.76
29	5:B2.b	.72	.69
30	4:B2.g	.49	.46
31	4:B2.i	.63	.68
32	5:B4.f	.57	.63
33	4:B2.g	.50	.58
34	5:A9	.35	.67
35**		.37	.45
36**		.15	.49
37	4:D8	.37	.49
38	5:B4.f	.20	.49
39	3 or 4:B2.h	.37	.47
40	4:B7	.20	.46
41	4:B2.h	.20	.47
42	4:D8	.35	.40
43*		.22	.56
44	5:B4.f	.24	.31
45*		.41	.32

* Items 1-19 test objectives 4:B4.a and 4:D2; certain of these items also test other objectives as noted on the table.

** Items which do not seem to test any of the Texas Math Curriculum objectives: 22, 35, 36, 43, and 45.

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 5 - Math Applications

		ITEM DIFFICULTY				ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample	ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1*		.46	.82	22*	3:C6.a	.46	.49
2*		.50	.80	23*	5:D6	.37	.59
3*		.57	.77	24*	5:B4.f	.35	.49
4*		.59	.89	25*	4:C6.c	.46	.47
5*		.50	.84	26*	5:D7	.33	.53
6*		.57	.84	27*	5:C5	.54	.62
7*		.28	.63	28*	5:C5	.20	.48
8*		.44	.69	29*	5:C5	.20	.44
9*		.52	.85	30*	3:A10	.15	.47
10*		.54	.79	31*	5:B4.f	.15	.42
11*		.30	.75	32*		.13	.36
12*		.35	.82	33*	5:B4.f	.07	.44
13*		.22	.61	34*		.28	.55
14**		.26	.53	35*	4:C2	.28	.55
15**		.46	.68	36*		.13	.40
16*	4:D8	.57	.64	37*	4:B2.e	.33	.46
17*	5:D6	.39	.63	38**		.11	.36
18*	4:D8	.35	.52	39*	4:C1	.15	.29
19*	4:C6.c	.15	.54	40*	4:D3 4:C6.b	.09	.22
20*	5:B4.f	.20	.16				
21*	5:D6	.39	.64				

* All the Level 5 Math Applications items test the following objectives: 5:A5.b, 5:B8, and 5:D6; certain items also test other objectives as noted on the table.

** Items which do not seem to test any of the Texas Math Curriculum objectives: 14, 15, and 38.

Texas Math Curriculum Objectives Listed by SAT-HI Items
and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 6 - Math Concepts

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1	5:B5	.71	.68
2	3:D1.a	.65	.69
3	2:B1.a	.95	.85
4	5:B5	.76	.69
5	5:B1	.82	.66
6	5:B2	.26	.59
7*		.66	.69
8	5:B1	.74	.66
9	4:A2.b	.24	.53
10	5:B1	.66	.65
11	3:B3	.61	.59
12	4:B4.a	.60	.67
13	6:B5	.66	.51
14	6:C8	.57	.49
15	5:B3	.48	.48
16*		.24	.45
17	5:A2.c.2	.81	.71
18	5:A11	.63	.67
19	2:A1.c	.86	.73
20	5:C1 4:D5	.50	.57
21	4:B2.i	.76	.68
22*		.77	.70
23	4:B1.b	.61	.55
24	4:A11	.52	.58
25	4:B2.j	.69	.56
26*		.84	.80
27	3:C2	.52	.70
28	4:D8	.54	.55
29*		.43	.43
30*		.60	.50
31	3:C1.a	.65	.58
32	5:C1	.57	.43
33	4:D10 4:D6.b 5:B8 5:D6	.34	.37
34	5:C5	.45	.32
35*		.27	.34

* Items which do not seem to test any of the Texas Math Curriculum objectives:

7, 16, 22, 26, 29, 30, and 35.

Texas Math Curriculum Objectives Listed by SAT-HI Items
and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 6 - Math Computation

		ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1*	4 or 5:B4.a	.89	.87
2*		.92	.91
3*		.84	.76
4*		.89	.84
5*		.68	.66
6*		.73	.72
7*		.66	.65
8*		.76	.67
9*		.81	.69
10*		.76	.66
11*		.74	.63
12*		.74	.66
13*		.73	.61
14*		.55	.59
15*		.65	.59
16*		.77	.69
17*		.65	.59
18*		.74	.60
19*		.61	.54
20	6:B2	.87	.74
21	4:B2.i	.94	.86
22**		.58	.68
23	6:B2	.76	.71
24	5:A9	.86	.85
25	6:B2	.50	.60
26	6:B2	.74	.62
27	6:B2	.79	.65
28	6:B2	.87	.76
29	6:B2	.69	.69
30	6:B2	.57	.46
31	6:B2	.79	.68
32	4:B4.f	.66	.63
33	6:B2	.55	.58
34	5:A9	.73	.67
35**		.90	.45
36**		.42	.49
37	4:D8	.53	.49
38	4:B4.f	.13	.49
39	6:B2	.61	.47
40	5:B7	.68	.46
41	6:B2	.44	.47
42	4:D8	.65	.40
43**		.60	.56
44	4:B4.f	.49	.31
45**		.55	.32

* Items 1-19 test Texas Math Curriculum objective: 4 or 5:B4.a

** Items which do not seem to test any of the Texas Math Curriculum objectives: 22, 35, 36, 43, and 45

Texas Math Curriculum Objectives Listed by SAT-HI Items and Item Difficulty for 1981 Texas Hearing Impaired Sample and 1973 Hearing Norm Sample

Level 6 - Math Applications

		ITEM DIFFICULTY				ITEM DIFFICULTY	
ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample	ITEMS	OBJECTIVES Stage: Content	Texas HI	Hearing Norm Sample
1*		.77	.84	21*	5:C7	.71	.67
2*		.87	.89	22*		.42	.40
3*		.92	.90	23*		.60	.67
4*		.81	.77	24*		.40	.52
5*		.82	.81	25*	5:C6	.60	.61
6*	6:D7	.40	.63	26*	5:C2	.55	.50
7*		.89	.72	27*		.86	.74
8*		.68	.71	28*		.66	.58
9*		.55	.69	29*		.59	.67
10*	5:C2	.74	.75	30*	5:C8	.69	.55
11*		.42	.44	31*		.16	.51
12*		.47	.60	32*		.34	.44
13*		.42	.65	33*	5:C2	.29	.40
14*		.40	.67	34*	5:C2	.61	.53
15*		.74	.69	35*	5:C7	.55	.46
16*		.73	.68	36*		.45	.56
17*	5:D7	.77	.82	37*		.34	.24
18*	5:C5	.68	.53	38*		.53	.45
19*	5:C5	.77	.60	39*		.24	.40
20*	5:C5	.34	.48	40*		.40	.31

* All the Level 6 Math Applications items test the following objectives: 5 or 6:D10 and 5 or 6:D6; certain items also test other objectives as noted on the table.

** Items which do not seem to test any of the Texas Math Curriculum objectives: 31, 32, 37, 38, 39, and 40.

APPENDIX A

Curriculum Objectives and Safety Test Level

MATHEMATICS

SAT-HI Test Level(s)

The student will:

A. Understand the Concepts of Number and Numeration

(1) A.1.a. begin to develop a concept of quantity through a variety of classroom exposures
A.2. become aware of numerals in many classroom locations
A.3. begin to be aware of the appearance of numerals in common settings (e.g., house numbers, license plates, highway signs, clocks, calendars, etc.)
A.4. become aware of ways numeration is used by workers through experiences in classroom learning centers, on field trips, with pictures, etc.
A.5. begin to recognize situations (e.g., in construction or block or puzzle activities) when a specific number of pieces are missing or some are left over

B. Understand the Structure and Properties of Mathematical Operation and Computation

B.1.a. discover and complete patterns using beads, blocks, and other objects
B.1.b. create equivalent sets of limited numbers of objects
(1) B.1.c. increase and decrease the size of two or three equal sets by equal amounts
(1) B.2.a. compare and classify objects as to size, height, and length
B.2.b. recognize and arrange objects in a series from small to large, large to small, in alternating sizes, shapes, colors, etc.
(1) B.2.c. match groups through one-to-one correspondence of up to five objects

C. Understand the Basic Principles of Geometry and Measurement

(1) C.1.a. discriminate and group simple geometric forms
(1) C.1.b. experience the properties of size and shape of squares, rectangles, triangles, and semi-circles in block play
C.2. discover how blocks of smaller size or different shape may be combined to be equivalent to larger blocks in block play
C.3. find geometric shapes identical in size and properties
C.6.a. experience measurement completed by the teacher (as when the teacher measures his/her height, weight, head size, etc.), using both standard and informal measuring tools

MATHEMATICS

SAT-HI Test Level(s)		
	C.6.b.	explore solid and liquid measures using tablespoons, cups, and larger vessels
(1)	C.6.c.	have concrete experiences of differences in distance, height, weight, volume, and other common dimensions that are subject to standard qualification
	D.	Understand the Language and Reasoning Processes of Mathematics
(1)	D.1.a.	begin to develop a counting vocabulary by rote and by manipulation of real objects
	D.1.b.	begin to learn, first receptively and then expressively, the simple terms for relative amount (i.e., some, few, many, too much, too many, not enough, etc.)
(1)	D.3.a.	begin to learn common informal terms for quantity (e.g., big, little, tall, short, far, near, long, etc.)
	D.3.b.	be exposed to some of the standard units of measurement (inches, pounds) as the teacher takes and expresses measures
(2)	D.4.	learn what a ruler, yardstick, thermometer, scale, clock, and calendar are
	D.6.	begin to formulate problems intuitively as they are encountered during activity and play so that solutions begin to be sought logically instead of by trial and error
	D.10.	begin to attack problems systematically in a sequence of steps

STAGE II
CONTENT

MATHEMATICS

SAT-III Test Level(s)		The student will:
	A.	Understand the Concepts of Number and Numeration
(2)	A.1.a.1.	develop a basic understanding of sets (grouping like objects) and sets of two different like objects with varying numbers of each (Example: How many A's?)
(2)	A.1.a.2.	be able to understand numerals as symbols for zero to 100 and be able to represent the number of a set with correct numeral
(3)	A.1.b.	be able to count by ones, tens, twos, fives (learned in that sequence)
(1,2,3,5,6)	A.1.c.	identify odd and even numbers
(1,2,3)	A.2.a.	understand place value of ones and tens in both canonical and noncanonical forms (Example: 4 ones = _ or 7 tens and 8 ones = _?_ or ___ tens and ___ ones =
(2,3)	A.2.b.	recognize halves, thirds, fourths of objects and sets
	A.3.	begin to recognize and express the numerals he/she sees in common settings
	A.4.	begin to identify ways in which numeration is used in work
(1,3)	A.5.a.	begin to use number concepts to solve simple practical problems successfully (e.g., figuring out how many more are needed, etc.)
(2,3)	A.5.b.	begin to translate simple verbal problems into numerica form
	A.12.	translate verbal expressions of number (0-100) into correct numerical form
	B.	Understand the Structure and Properties of Mathematical Operatio and Computation
(1,2,3,5,6)	B.1.a.	discover and complete numerical patterns using objects and/or numerals
(1)	B.1.b.	create equivalent sets using symbols and pictures
(3)	B.1.c.	begin to understand union of sets and addition and subtraction as related to sets and subsets
(1,2,3)	B.2.a.	be able to add horizontally with sums from zero to 100 in both canonical and noncanonical form (no regrouping)*
(1,2,3)	B.2.b.	be able to add vertically with sums from zero to 100 in canonical form and to regroup units and tens
(1,2)	B.2.c.	be able to subtract horizontally with minuends up to 99, subtrahend and difference < ten in both canonical and noncanonical forms (no regrouping with one and two digits only)

* Canonical form places all unknowns to the right of the equals sign Noncanonical form has one or more unknowns to the left of the equa sign.

MATHEMATICS

SAT-III Test Level(s)		
	B.2.d.	begin vertical subtraction with one-, two-, three-digit numbers (no regrouping) subtracting one-digit numbers from one-digit numbers, one-digit numbers from two-digit numbers, and two-digit numbers from three-digit numbers
	B.2.e.	begin horizontal multiplication with products to 5 x 5 (canonical form only)
	B.2.f.	begin simple division as the inverse operation of multiplication
(2,3)	B.3.	begin to become familiar with the commutative and associative properties of addition and with the identity property (zero) of addition
(1)	B.4.	be able to compare two numbers when one is <, >, or = to the other with whole numbers from zero to 100
	B.7.a.	solve simple addition and subtraction equations using number lines as aids
(1)	B.7.b.	be able to add and subtract in equations involving one-digit numbers (addition equations of sums to 19; subtraction equations with minuends to 18)
	C.	Understand the Basic Principles of Geometry and Measurement
(1)	C.1.a.	consolidate through concrete experience the properties of squareness, rectangularity, roundness and triangularity
	C.1.b.	construct designs with squares, strips, and right triangles with a common base length
	C.1.c.	distinguish between regular and irregular geometric shapes
(2)	C.2.	explore equivalences which can be constructed with different size squares, rectangles, and triangles, all having base lengths in multiples of one inch
	C.3.	identify geometric shapes different in size but identical in other properties
	C.5.	recognize that two-dimensional drawings represent those dimensional spaces, such as in a floor plan, simple map, or picture; begin using number lines
(1,2)	C.6.a.	begin to read a clock (using counting by ones, fives, and tens) and calendar correctly
(1,3)	C.6.b.	begin to understand and use the simpler units of distance, volume, and weight (i.e., inches, feet, yards, cups, pints, quarts, ounces, pounds, tons), and take temperature readings correctly
(1,3)	C.6.c.	be able to count money up to one dollar

MATHEMATICS

SAT-HI Test Level(s)		
	D.	Understand the Language and Reasoning Processes of Mathematics
(2,3)	D.1.a.	know the number names and symbols for numbers from zero to 100
	D.1.b.	know the names and symbols for "greater than, less than, and equal to"
	D.2.	know the names and symbols for the operations of addition, subtraction, and multiplication
(2,3)	D.3.	know the unit names for cups, pints, quarts, degrees, cents, nickels, dimes, quarters, pennies, and dollars
	D.4.	know the names of measuring instruments he/she uses
	D.5.	know the names of circles, squares, rectangles, triangles, lines, points, angles
	D.6.a.	understand what he/she is supposed to do to solve a problem stated in operational form
(2)	D.6.b.	begin to explore how simple verbal problems may be stated in numerical form
	D.11.	begin learning how to express the same quantity in two or more different forms

MATHEMATICS

SAT-HI Test Level(s)		The student will:
	A.	Understand the Concepts of Number and Numeration
(2,3)	A.1.a.	solidify and extend his/her understanding of numerals as symbols for numbers (0 to 9,999) and express accurately the number of a set using the correct numeral
	A.1.b.	be able to count by ones, tens, twos, fives, threes (learned in that sequence)
(5)	A.1.c.	recognize that odd numbers added to odd numbers and even numbers added to even numbers produce even numbers, while odd numbers added to even numbers or even numbers added to odd numbers produce odd numbers
(1,3)	A.2.a.	understand the place value for ones, tens, and hundreds (Example: 8 hundreds 4 tens 5 ones = 845)
(3,4)	A.2.b.	extend his/her range of familiarity with and begin to identify other forms of subdividing besides halves, thirds, and fourths of objects and sets; grasp the concept of equivalent fractions
	A.3.	recognize and express the numerals he/she sees in common settings
	A.4.	identify additional ways in which numeration is used in various work situations and vocations (e.g., role play banker, grocer, postal clerk)
(2,3,4)	A.5.a.	be able to solve simple practical problems (how many days in each month, how many school days left in the month, etc.)
(3)	A.5.b.	be able to translate moderately complex problems into numerical form
(1,3)	A.6.	begin to analyze what information is essential for the solution of a problem
(1,3)	A.7.	begin to use the given information to obtain the essential information needed to solve a problem
(3,5)	A.10.	develop facility in translating expressions in one common unit to equivalent expressions in a larger or smaller unit (e.g., hours to minutes, cups to quarts, feet to yards, etc.)
(2)	A.12.	translate verbal expression of quantity (zero to 9,999) into correct numerical form
	B.	Understand the Structure and Properties of Mathematical Operation and Computation
(3,4)	B.1.	understand simple basic arithmetical operations in relation to sets

MATHEMATICS

SAT-III Test Level(s)		
(2,3)	B.2.a.	be able to add two- or three-digit numbers horizontally with sums up to 180 in both canonical and noncanonical forms (using regrouping)*
(2,3,5)	B.2.b.	be able to add vertically with sums to 9999 (regrouping) using both canonical and noncanonical forms
	B.2.c.	be able to subtract one- and two-digit numbers horizontally with minuends to 99, subtrahend and difference both < 9 and > 10 in both canonical and noncanonical forms (regrouping)
(2,3,4,5)	B.2.d.	be able to subtract one-, two-, three-, and four-digit numbers vertically (regrouping)
(2,3,4)	B.2.e.	be able to multiply horizontally products from 2 x 1 to 12 x 12; be able to multiply two- and three-digit numbers vertically by one- and two-digit numbers
(2,3,4,5)	B.2.f.	understand division as the inverse of multiplication and as repeated subtraction; be able to divide with combinations from 9 x 9 to 5 x 90 (canonical and noncanonical forms)
(2,3,4)	B.2.g.	begin long division of two-digit numbers by one-digit divisors with and without remainders
(3,4,5)	B.2.h.	develop skill in adding and subtracting common and mixed fractions and in multiplying and reducing common fractions
	B.2.i.	become familiar with adding and subtracting of decimals as monetary units (no regrouping) with sums ≤ $1.00
(2,3,4,5,6)	B.3.	extend understanding of commutative, associative, and identity (zero) properties in addition; become familiar with the commutative, associative, and identity (one) properties in multiplication; begin to understand the distributive property in multiplication
(2,3)	B.4.a.	be able to compare two sums when one is <, >, or = to the other with sums to 99 (no regrouping) Example: $3 + 4 \underset{<>=}{\underline{\quad ? \quad}} 5 + 1$
(2,3)	B.4.b.	be able to compare two differences when one is <, >, or = to the other with minuends to 99 (no regrouping)
	B.4.c.	be able to determine which of two fractions with the sa numerator is less than or greater than the other
	B.7.a.	solve addition and subtraction equations using number lines as aids
	B.7.b.	be able to add and subtract one- and two-digit numbers in equation form with sums up to 99 and minuends to 99 (no regrouping)
(1,3,4)	B.8.	begin learning to select the appropriate operation to solve word problems

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* Canonical form places all unknowns to the right of the equals sig Noncanonical form has one or more unknowns to the left of the equ- sign.

MATHEMATICS

SAT-HI Test Level(s)		
(2)	B.9.	begin using appropriate operations and computations to solve quantitative problems in his/her daily life (e.g., making change, scheduling time, keeping score, etc.)
	C.	Understand the Basic Principles of Geometry and Measurement
(2,4,5,6)	C.1.a.	grasp the concepts of point, line, angle, right angle, parallel, perpendicular, curve, closed curve, and polygon
	C.1.b.	be able to construct simple geometric forms using a straightedge and compass
(3,6)	C.2.	begin to understand the concept of area and the measurement of area in such units as square centimeters, inches, and feet in regular polygons
	C.3.	encounter the notion of congruent angles, segments, and triangles
	C.4.	encounter isosceles and equilateral triangles
(2)	C.5.	begin to explore scale drawings, bar graphs, circle graphs, and pictorial graphs; extend use of number lines
(2,4,5)	C.6.a.	extend knowledge and accuracy in reading a clock (quarter past, half past, quarter of, etc.); add days, weeks, months, and other time units to his/her understanding
	C.6.b.	consolidate and apply measurement using basic English units and add other units to his/her awareness (peck, bushel, rod, acre, gallon, etc.)
(2,3)	C.6.c.	be able to add and subtract any given monetary amounts
	C.7.	encounter the common units of linear measurement in the metric system
	C.8.	practice combining quantities expressed in different units
	D.	Understand the Language and Reasoning Processes of Mathematics
(2,3,5,6)	D.1.a.	know the number names and symbols for numbers from 0 to 9,999
(3)	D.1.b.	extend knowledge of "<, >, =" symbols; gain familiarity with fraction notation, the symbols for angle, triangle, and congruent, and with the names for basic geometric figures
(5)	D.2.	know the names and symbols for the operations of addition, subtraction, multiplication, and division
(2,3)	D.3.	know the unit names for cups, pints, quarts, pounds, ounces, pennies, cents, nickels, dimes, quarters, half dollars, dollars, inches, feet, degrees, etc.
	D.4.	know the names of measuring instruments used, such as measuring cups, ruler, yardstick, thermometer, etc.

MATHEMATICS

SAT-HI Test Level(s)		
	D.6.a.	understand what he/she is supposed to do to solve problems stated in operational form and be familiar with single equation forms
(1,2,3)	D.6.b.	understand how verbal problems may be stated in numerical form
	D.7.	begin to discover that problems often contain irrelevant information
	D.8.	begin to estimate the approximate answer to a problem
	D.11.	begin to use his/her knowledge of expressing the same quantities in two or more different forms to put expressions given in different forms into a common form
	D.12.	discover the necessity to express answers to problems in terms called for by the original problem statement

MATHEMATICS

The student will:

A. Understand the Concepts of Number and Numeration

SAT-HI Test Level(s)		
	A.1.a.	solidify and extend his/her understanding of numerals as symbols for numbers (zero to 99,999) and be able to express accurately the number of a set with the correct numeral
	A.1.b.	be able to count by ones, tens, twos, fives, threes, fours, sixes, sevens, eights, and nines; be able to count by ones with negative numbers
(3,4)	A.2.a.	understand the place value of ones, tens, hundreds, and thousands, in both canonical and noncanonical forms*
(5,6)	A.2.b.	recognize and understand any fractional subdivision of objects or sets
	A.3.	be familiar with the common uses of numeration to identify, locate, limit, specify, and account for things he/she encounters as a citizen and consumer
	A.4.	become familiar with vocational uses of number and numeration for production, inventory, marketing, calculation of overhead, profit, taxes, dividends, etc., in a variety of trades and businesses
(3,4)	A.5.a.	develop facility in stating problems he/she encounters so that the knowns and unknowns are both made clear
(3,4)	A.5.b.	be able to translate his/her verbalization of the problem accurately into numerical form
(3,4)	A.6.	recognize when he/she must manipulate the information he/she has obtained to be able to put it in usable form in order to solve the problem he/she has identified
(4)	A.7.	learn how to manipulate known information to obtain needed information preliminary to problem solution
	A.8.	learn to check to be sure that all the units he/she is working with are consistent with each other and with the problem he/she is solving
	A.9.a.	grasp the concept of squaring a number and become able to square any given number
	A.9.b.	learn to take the square root of any whole number with a perfect square root, to estimate the square root of other whole numbers, and to use a table of square roots

*Canonical form places all unknowns to the right of the equals sign. Noncanonical form has one or more unknowns to the left of the equals sign.

MATHEMATICS

Test Level(s)		
(4)	A.10.	develop facility in translating expressions in different common units into expressions in the same unit across a variety of unit forms (weight, volume, distance, time, speed, money, area, etc.)
(5,6)	A.11.	learn the decimal equivalents of common fractions and percentages
	A.12.	translate verbal expressions of numbers (zero to 99,999) into correct numerical form
	B.	Understand the Structure and Properties of Mathematical Operation and Computation
	B.1.a.	extend understanding of basic arithmetical operations in relation to sets
(4,5,6)	B.1.b.	recognize null set, overlapping sets, product sets, disjoint sets, and subsets
(5)	B.1.c.	know the symbols for and operations of sets (i.e., intersection of sets and union of sets)
	B.2.a.	be able to add two- and three-digit numbers horizontally containing one to four digits (regrouping) in both canonical and noncanonical forms
(3,4)	B.2.b.	be able to add any set of numbers vertically with sums to 99,999 (regrouping)
(4)	B.2.c.	be able to subtract one- to four-digit numbers horizontally with minuends to 9,999 (regrouping) in both canonical and noncanonical forms
(3,4)	B.2.d.	be able to subtract one-, two-, three-, four-, and five-digit numbers vertically (regrouping)
(3,4,5)	B.2.e.	be able to multiply horizontally with two- and three-digit numbers (canonical and noncanonical forms) and be able to multiply vertically with three- and four-digit numbers
(4,5)	B.2.g.	be able to divide five-digit numbers by one-, two-, and three-digit divisors
(4,5)	B.2.h.	extend skill in adding, subtracting, and multiplying fractions; develop skill in dividing fractions (extending both to mixed numbers)
(5,6)	B.2.i.	consolidate skill in adding and subtracting decimals and begin to develop a command of multiplication and division of decimals
(2,4,5,6)	B.2.j.	begin using all operations on signed numbers
(3,4,5)	B.3.	extend knowledge of the associative, commutative, distributive, and identity properties in appropriate operations on fractions and decimals as well as on whole numbers
(3,4,5,6)	B.4.a.	be able to compare any two whole numbers, fractions, or decimals, showing equality or direction of inequality

MATHEMATICS

SAT-HI Test Level(s)		
(4)	B.4.d.	be able to compute ratios up to 1,000:1
(4)	B.4.e.	understand proportion as an extension of ratio
(4,6)	B.4.f.	develop a basic familiarity with percent
(4)	B.5.	apply the concept of squaring numbers to the squaring of one- and two-digit numbers and extend the concept of squares to the general concept of exponents
(3,4,5)	B.7.	solve any given addition, subtraction, multiplication, or division equation with one unknown (using aids as necessary)
(4)	B.8.	extend his/her ability to analyze word problems and to select the correct operations to solve them
	B.9.	expand the frequency with which he/she spontaneously uses mathematical skills to solve the problems of daily living

C. Understand the Basic Principles of Geometry and Measurement

(3,4,5)	C.1.	extend understanding of the concepts and applications of points, segments, rays, lines, planes, space, etc.
(3,4,5)	C.2.	develop skill in finding the area of rectangles, triangles, circles, and the surface area and volume of cubes and rectangular prisms
(4)	C.3.	solidify his/her understanding of the meaning of "congruent" in relation to lines, angles, triangles, and other figures; begin exploring the concept of similar figures
	C.4.	become familiar with the Pythagorean theorem and be able to solve problems using the theorem
	C.5.a.	extend familiarity with circle, bar, and pictorial graphs; encounter line graphs
	C.5.b.	relate number lines and scale drawings to ratio and proportion
	C.6.a.	be able to convert time expressed in any one unit to any other unit
(5)	C.6.b.	be able to convert distance, volume, and weight from one unit to another; relate Fahrenheit to centigrade measurement of temperature
(5)	C.6.c.	be able to add, subtract, multiply, and divide any monetary amount
(4)	C.7.	recognize common units of volume and weight measurement in metric system
	C.9.	be able to add combinations of different units expressing distance, volume, weight and time

D. Understand the Language and Reasoning Processes of Mathematics

(1)	D.1.a.	know number names and symbols for numbers from zero to 99,999

MATHEMATICS

SAT-HI Test Level(s)		
(3,4)	D.1.b.	consolidate knowledge of math symbols and terms already encountered; extend familiarity to graphing, ratios, proportions, percentages, and exponents
(5)	D.2.	know the most efficient sequence to undertake symbolized operations involving parentheses, coefficients and exponents
(5)	D.3.	know the names, in both English and metric systems, for all the common units of length (distance), weight, volume, temperature, angularity, speed, acceleration, time, area, and pressure
	D.4.	know the names of measuring instruments including protractor, metric stick, barometer, speedometer, etc.
(5,6)	D.5.	extend familiarity with names of polygons
(1)	D.6.a.	understand how to solve problems stated in operational form and equation form
(6)	D.6.b.	understand how increasingly complex verbal problems may be stated in numerical form
	D.7.	recognize when more information is needed or when all necessary facts are present to solve a given problem
(4,5,6)	D.8.	develop skill in estimating the approximate answer to a given problem
	D.9.	begin to understand logical reasoning as opposed to random guessing
(2,6)	D.10.	understand the vocabulary used to indicate that a particular operation is required to solve a problem
	D.11.	automatically change the form of different expressions to permit necessary operations to be carried out
	D.12.	practice stating answers to problems correctly in terms required by the original problem

MATHEMATICS

SAT-III Test Level(s)		The student will:
	A.	Understand the Concepts of Number and Numeration
	A.1.a.	solidify and extend his/her understanding of numerals as symbols for numbers expressed up to billions and express accurately the number of any given set with the correct numeral
	A.1.b.	extend skill in counting by ones through tens and begin to count by tenths, hundredths, and thousandths as decimals
(4)	A.2.a.	understand the place value of ones, tens, hundreds, thousands, and ten thousands
(4)	A.2.c.1.	be able to round whole numbers to the nearest tens place, hundreds place, and thousands place
(6)	A.2.c.2.	be able to round decimal numbers to the nearest whole number with decimals written as tenths, hundredths and thousandths
(5)	A.2.c.3.	be able to round decimal numbers to the nearest tenth with decimals written as tenths, hundredths and thousandths
	A.3.	initiate use of numeration to serve practical purposes of reference, location, specification, etc.; expect, identify and make habitual use of the common uses of numeration in his/her environment
	A.4.	practice several common uses of numeration found in vocational areas from a variety of trades and businesses
	A.5.a.	develop facility in identifying spontaneous situations which present problems requiring quantitative solution
(5)	A.5.b.	accurately formulate problems encountered in both verbal and numerical form
	A.6.	routinely identify which information he/she can use to solve a problem and whether the essential information is in the necessary form
	A.7.	automatically manipulate known information into the proper form to solve identified problems
	A.8.	routinely ascertain that he/she is working with the proper units in all aspects of problem solving
(5,6)	A.9.	learn the concepts of exponents larger than squares (i.e., greater than two); be able to add, subtract, multiply, divide, and expand expressions containing exponents
(5)	A.10.	routinely translate expressions in different units to expressions with a common unit relevant to the problem

MATHEMATICS

SAT-HI Test Level(s)		
(5,6)	A.11.	be able to express any fraction as its decimal equivalent
	A.12.	translate verbal expressions of number (zero to 99,999) into correct numerical form
	B.	Understand the Structure and Properties of Mathematical Operation and Computation
(6)	B.1.	continue to extend understanding of set concepts and operations and to apply knowledge in the formulation and solutions to problems
(5,6)	**B.2.b.	be able to add and subtract vertically any given numbers with speed and accuracy
(5)	**B.2.e.	extend practice in multiplying horizontally numbers with products to 90 x 90 (multiples of ten) and products to 19 x 90, all in both canonical and noncanonical forms; be able to multiply vertically any given numbers with speed and accuracy*
	**B.2.g.	be able to divide any given numbers with speed and accuracy
(6)	B.3.	apply commutative, associative, distributive, and identity properties deliberately in operations on any set of numbers
(5)	B.4.a.	be able to compare negative numbers and the sums, differences, products, and quotients of operations on negative numbers
	B.4.d.	continue to find new applications for ratio
	B.4.e.	extend his/her ability to use proportion
(5)	B.4.f.	become secure and accurate in computing, using, and interpreting percent
(5,6)	B.5.	extend his/her familiarity with exponents and be able to determine the whole number represented in exponential notation
	B.6.	gain a basic knowledge of square root, its estimation, and its determination with tables
	B.7.	be able to set up and solve independently any equation with one unknown
(5,6)	B.8.	apply the appropriate sequence of operations necessary to solve complex word problems

*Canonical form places all unknowns to the right of the equals sign. Noncanonical form has one or more unknowns to the left of the equals sign.

**All B.2. entries are to be applied to whole numbers, fractions, mixed numbers, decimal numbers, and signed numbers.

SAT-HI Test Level(s)

B.9. spontaneously apply mathematical operations to order and cope with the events and problems of daily living

C. Understand the Basic Principles of Geometry and Measurement

(5,6) C.1. be able to recognize instances of geometric forms and to apply concepts of the basic properties of these forms to the solution of practical problems

(5,6) C.2. extend and refine skill in determining area and volume of geometric figures of various orders of magnitude

(5) C.3. be able to determine whether any two given figures are similar or congruent by applying basic congruence theorems

C.4. be able to utilize the Pythagorean theorem in determining the length of any side of a right triangle and to solve practical problems applying the theorem

(5,6) C.5. develop ease in constructing and interpreting graphs and scale drawings of various types

(6) C.6. use all the common units of measurement in the English system with confidence

(6) C.7. use the common units of measurement in the metric system with growing accuracy

(5,6) C.8. know how to convert from the English to the metric system as necessary and how to convert from one unit to another within each system

C.9. be able to combine two quantities expressed in different units in either the English or the metric system

D. Understand the Language and Reasoning Processes of Mathematics

(4) D.1.a. know names and symbols for numbers from zero to one million

(5) D.1.b. consolidate knowledge of mathematical symbols already encountered and add familiarity with negative numbers, square root signs, and metric unit symbols

D.3. use routinely the correct names for common units of length (i.e., distance, weight, volume, temperature, angularity, speed, acceleration, time, area, pressure, and power) in both English and metric systems

D.4. be familiar with and know the names of common tools of measurement and specialized measurement tools used in interest areas such as auto mechanics, sewing, drafting, etc.

(5,6) D.6. begin to understand how to build a mathematical model of a problem and become increasingly skilled in translating verbal problems into numerical form

MATHEMATICS

SAT-HI Test Level(s)		
(5,6)	D.7.	recognize what information is needed to solve a problem
(5)	D.8.	begin to understand the processes of successive approximation and successive elimination
	D.9.	begin to recognize logically when something can be true or must be false
(2,5,6)	D.10.	know how to select appropriate operations to solve a problem
	D.11.	routinely analyze whether given information must be transformed in order for a problem to be solved
	D.12.	check that the solution to a problem is stated in correct terms, as required by the original problem

MATHEMATICS

SAT-HI
Test
Level(s)

The student will:

A. Understand the Concepts of Number and Numeration

A.1. be able to accurately express most common observations in numerical terms

A.2. be able to correctly interpret place value up to billions in whole numbers, and ten-thousandths in decimal numbers

A.3. be familiar with common uses of numbers and numeration encountered in daily living (i.e., distance, length and width, volume, weight, speed, power, pressure, temperature, income, etc.)

A.4. identify common uses and special applications of numbers and numeration in various vocations

A.5. recognize situations in which problems, questions, or uncertainties can be reduced to or expressed in quantitative terms

A.6. recognize when sufficient information exists in a situation, even though not in direct form, to answer a question or solve a problem

A.7. be able to state known information so as to be able to obtain needed (unknown) information

A.8. frame quantitative problems he/she encounters in correct terms

A.9. understand the concept of exponents and have command of squares and square roots

A.10. be able to transform whole numbers in one unit to equivalent expressions in another unit

A.11. be able to convert fractions from one form to an equivalent form

A.12. accurately translate verbal expressions of quantity into numerical expressions

B. Understand the Structure and Properties of Mathematical Operation and Computation

B.1. have a well-developed understanding of set theory and operation in relation to sets and whole numbers, inequalities, sets of points, congruency, sets and fractions, sets of equivalent fractions, intersection of sets, and union of sets

(6) B.2. add, subtract, multiply, and divide whole numbers, fractions, mixed numbers, and decimals, with dependable accuracy

(6) B.3. understand and routinely apply the commutative, associative, distributive, and identity properties of operations

SAT-III
Test
Level(s)

MATHEMATICS

B.4. be able to compare quantities and compute ratio, proportion, and percent, with considerable accuracy

(6) B.5. be able to square numbers quickly and know how to find the whole number represented in exponential notation

B.6. know how to find square root by using a table or a simple successive process of approximation

(6) B.7. know how to solve equations with one variable

B.8. select the appropriate operations to solve problems he/she identifies or encounters

B.9. apply the appropriate operations and computations to determine correct responses to demands made on him/her as a citizen (taxes, licenses), a consumer (costs, discounts, service charges, interest), and an employee (job requirements, salary, deductions)

C. Understand the Basic Principles of Geometry and Measurement

C.1. know the properties of common geometric forms

C.2. know how to determine the area of two-dimensional polygons and the volume of three-dimensional polygons

C.3. know how to determine similarity and congruency of polygons

C.4. know how to determine the length of the hypotenuse or either side of a right triangle, given the length of the other two sides

C.5. be able to read pictorial representations of quantity in graphs, maps, scale drawings, and similar figures

C.6. know all the common units of measurement in the English system

C.7. know all the common units of measurement in the metric system

(6) C.8. be able to make simple conversions from one system to the other, and complex conversions from one unit size to another within each system (e.g., miles to feet, ounces to pounds, cubic centimeters to litres, kilometers to meters, etc.)

C.9. know how to accurately combine two quantities expressed in different units in the same system

D. Understand the Language and Reasoning Processes of Mathematics

D.1. have complete command of number names and symbols (cardinal and ordinal) and all of the common terms and symbols of numerical relationship (i.e., equal, unequal, less than, greater than, ratio, proportion, percent, fraction, decimal)

MATHEMATICS

SAT-III Test Level(s)		
	D.2.	know the terms and symbols for mathematical operations
	D.3.	be familiar with the precise terms of the common units of measurement (i.e., length, weight, volume, temperature, pressure, speed, power, money, etc.) in both the English and metric systems
	D.4.	be familiar with the common tools of measurement and their names, as well as measurement tools in areas of special interests
	D.5.	know the correct names for common geometric concepts and figures (i.e., point, line, angle; parallel, intersecting; triangle, square, polygon; similar, congruent, coinciding, etc.)
(6)	D.6.	know how to build a mathematical model of a problem (i.e., how to state in numerical terms a problem encountered in verbal or figural form)
(6)	D.7.	know how to distinguish between relevant and irrelevant information in formulating a problem
	D.8.	know the processes of successive approximation and successive elimination
	D.9.	know how to logically determine whether something can be true or must be false
(6)	D.10.	know how to select a sequence of operations to solve a problem in terms of what is required by the problem, and which operation simplifies the next
	D.11.	know how to transform one expression into an alternative equivalent expression to allow for completion of an otherwise impossible operation
	D.12.	know how to interpret the product of his/her operations in terms of the original problem

APPENDIX 5

Individual Student Score Report

APPENDIX 3

SAMPLE

OFFICE OF DEMOGRAPHIC STUDIES
STANFORD ACHIEVEMENT TEST ANALYSIS

EXAMINEE: NO ONE, John
TEST LEVEL: 3
SCHOOL: NO PLACE SCHOOL, NO PLACE, U.S.A.

BIRTHDATE: 6/6/66
TEST DATE: 3/3/78
AGE AT TESTING: 11

Subtest Area	No. of Items	Right	Wrong	Blank	Percent Right	Scale Score	Grade Equiv	H.I. Rank
VOCABULARY	37	18	19	0	48	115	2.0	78
Reading and Literature	13	4	9	0	30			
Nonfiction and Reference	6	2	4	0	33			
Mathematics and Science	9	4	5	0	44			
Social Science	9	8	1	0	88			
READING COMPREHENSION	70	41	29	0	58	136	3.4	81
Global Meaning	6	4	2	0	66			
Explicit Meaning	19	6	13	0	31			
Implicit Meaning	19	13	6	0	68			
Meaning Determined by Context	13	10	3	0	76			
Inferential Meaning	13	8	5	0	61			
MATHEMATICS CONCEPTS	32	20	12	0	62	151	4.7	83
Numbers	8	4	4	0	50			
Notation	11	6	5	0	54			
Operations	8	5	3	0	62			
Geometry, Measurement, Etc.	5	5	0	0	100			
MATHEMATICS COMPUTATION	40	16	2	22	40	151	4.5	59
Knowledge of Primary Facts	18	6	1	11	33			
Addition and Subtraction	9	5	1	3	55			
Multiplication and Division	13	5	0	8	38			
MATHEMATICS APPLICATION	28	22	6	0	78	151	4.6	82
Solution of One-Step Problem	7	7	0	0	100			
Analysis and Solution Design	13	10	3	0	76			
Measurement	8	5	3	0	62			
LANGUAGE	55	1*	1	53	1	55	1.0	1
Capitals, Punctuation, Usage	38	0	0	38	0			
Word Sensitivity	11	1	0	10	9			
Recognizing Complete Sentences	6	0	1	5	0			

SAMPLE

*This score is below what would be expected from pure guessing.

APPENDIX 6

SAT-HI School Summary Reports

OFFICE OF DEMOGRAPHIC STUDIES
STANFORD ACHIEVEMENT TEST SCHOOL REPORT
FOR THE STATE OF TEXAS
1981-1982 SCHOOL YEAR

REPORTING SOURCE: NO NAME REGIONAL ID:1 CLUSTER: X

S.A.T. SCALED SCORE SUMMARY

	AGE GROUP									
	8 OR YOUNGER		11-13		14-16		17 OR OLDER		ALL AGES	
	N	AVE	N	AVE	N	AVE	N	AVE	N	AVE
READING COMPREHENSION										
SCHOOL:	17	130	17	149	24	155	21	162	79	150
CLUSTER:	117	121	111	135	134	142	131	142	493	136
STATE:	443	119	524	129	611	136	719	138	2297	132
MATHEMATICS CONCEPTS										
SCHOOL:	17	120	17	157	24	168	21	180	79	153
CLUSTER:	117	114	109	138	134	146	131	149	491	138
STATE:	433	114	516	129	602	139	712	146	2263	134
MATHEMATICS COMPUTATION										
SCHOOL:	17	138	17	171	24	184	21	187	79	172
CLUSTER:	113	130	112	153	128	164	131	167	484	155
STATE:	429	128	518	147	591	160	706	164	2244	152

PERCENTILE DISTRIBUTION OF DEMOGRAPHIC CHARACTERISTICS

	AGE GROUP				
	8 OR YOUNGER	11-13	14-16	17 OR OLDER	ALL AGES
HEARING LOSS					
SCHOOL:					
70DB OR LESS	0	0	12	14	7
71DB TO 90DB	23	17	25	33	25
91DB OR MORE	76	82	62	52	67
CLUSTER:					
70DB OR LESS	34	33	27	14	26
71DB TO 90DB	21	21	24	27	23
91DB OR MORE	44	45	48	58	49
STATE:					
70DB OR LESS	27	26	24	16	22
71DB TO 90DB	24	23	25	26	25
91DB OR MORE	48	50	50	56	51
ETHNIC BACKGROUND					
SCHOOL:					
WHITE	100	100	91	100	97
HISPANIC	0	0	0	0	0
BLACK	0	0	8	0	2
CLUSTER:					
WHITE	70	66	58	68	66
HISPANIC	6	8	12	6	8
BLACK	22	24	28	25	25
STATE:					
WHITE	55	54	48	54	52
HISPANIC	29	27	31	23	27
BLACK	15	18	19	22	19
ADDITIONAL HANDICAPS					
SCHOOL:					
ONE OR MORE	0	11	29	33	20
NONE REPORTED	100	88	70	66	79
CLUSTER:					
ONE OR MORE	8	16	20	22	16
NONE REPORTED	91	83	80	77	83
STATE:					
ONE OR MORE	12	19	24	25	21
NONE REPORTED	87	80	75	74	78

APPENDIX 7

Longitudinal SAT-HI Reports

APPENDIX 7

CENTER ASSESSMENT-DEMO STUDIES
GALLAUDET COLLEGE
20-Oct-82

LONGITUDINAL ACHIEVEMENT ANALYSIS
TEXAS
1977-81 SAT-HI SCALE SCORES

PRT SPC	NONAME REGIONAL STUDENTS NAME	AGE	AUD	L 7 7	L 7 8	L 7 9	L 8 1	RDG COM 77	RDG COM 78	RDG COM 79	RDG COM 81	MTH CNC 77	MTH CNC 78	MTH CNC 79	MTH CNC 81	MTH CMP 77	MTH CMP 78	MTH CMP 79	MTH CMP 81	AVRG YR-GR RDG	AVRG YR-GR M-CNC	AVRG YR-GR M-CMP
	ALLEN, TOM	12	PRF	*	*	*	3	***	***	***	132	***	***	***	140	***	***	***	158	*****	*****	*****
	BERAULT, K.	7	PRF	*	*	*	1	***	***	***	114	***	***	***	104	***	***	***	112	*****	*****	*****
	CARD, S.	13	PRF	*	1	1	2	***	114	116	116	***	96	96	110	***	121	118	143	1.0	3.5	4.7
	DICKSON, P	16	MLD	*	2	2	3	***	131	133	141	***	130	127	137	***	148	169	170	3.0	1.0	10.7
	ELVIS, X	20	NML	*	*	6	6	***	***	206	195	***	***	143	190	***	***	165	201	-5.5	23.5	18.0
	FRY, B.	10	MLD	*	*	*	1	***	***	***	116	***	***	***	131	***	***	***	125	*****	*****	*****
	GALLOP, T.	18	MOD	*	2	2	3	***	123	131	136	***	119	131	149	***	146	166	162	5.2	10.5	9.0
	HOTTO, S.	18	PRF	*	*	*	1	***	***	***	103	***	***	***	87	***	***	***	104	*****	*****	*****
	IOWA, P.	13	MLD	*	*	*	1	***	***	***	100	***	***	***	103	***	***	***	123	*****	*****	*****
	JABLONSKI, S.	14	MOD	*	1	2	3	***	126	130	145	***	136	136	157	***	141	164	175	5.7	5.2	14.2
	KULP, R.	12	NML	*	*	1	1	***	***	100	107	***	***	103	122	***	***	116	125	3.5	9.5	4.5
	LONG, G.	15	MSV	*	*	*	6	***	***	***	204	***	***	***	178	***	***	***	179	*****	*****	*****
	MORRIS, S.	17	SEV	*	*	*	4	***	***	***	150	***	***	***	171	***	***	***	173	*****	*****	*****
	NOD, B.	14	SEV	1	2	2	2	118	120	122	123	115	117	119	125	128	131	139	154	1.5	2.3	6.2
	OSBORN, T.	17	MSV	*	2	2	2	***	118	123	130	***	119	127	137	***	154	159	169	4.2	6.5	5.0
	PACKWOOD, A	12	MSV	*	1	1	5	***	110	116	171	***	155	155	171	***	125	120	157	16.7	4.0	6.7
	QUAYNOE, L.	9	SEV	*	*	*	1	***	***	***	107	***	***	***	103	***	***	***	108	*****	*****	*****
	RAWLINGS, B	9	MSV	*	*	*	1	***	***	***	121	***	***	***	110	***	***	***	118	*****	*****	*****
	STEVENS, J.	18	MSV	*	1	1	1	***	111	99	114	***	122	106	155	***	131	131	145	-2.2	4.2	3.5
	TAMARA, O	17	MSV	*	1	1	1	***	105	111	107	***	96	96	104	***	120	118	118	2.0	2.0	-1.0
	ULINSKI, F.	14	SEV	1	5	*	2	138	162	***	118	129	151	***	140	141	148	***	133	4.7	9.2	1.0
	VAULT, R.	9	SEV	*	*	1	1	***	***	99	117	***	***	104	139	***	***	116	133	9.0	17.5	8.5
	WHEELER, P.	17	MOD	*	*	*	3	***	***	***	142	***	***	***	140	***	***	***	164	*****	*****	*****
VAL								2	10	12	23	2	10	12	23	2	10	12	23	13	13	13
MEA								128	122	124	131	122	124	120	135	135	137	140	146	3.763	7.615	7.013
STD								14	16	29	28	9.9	20	19	27	9.2	12	23	26	5.337	6.556	5.182

APPENDIX 8

Reporting Source Summaries

APPENDIX 8

44· NO NAME Regional Day Sch fr Deaf YEAR: 1981 - 1982 (PAGE 1 OF 5)

AGE	REPORTING SOURCE		CLUSTER X		TEXAS		1980-81 NATION	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL STUDENTS	169	100.0	425	100.0	4363	100.0	54504	100.0
INFORMATION NOT REPORTED	0	0.0	5	1.2	25	0.6	717	1.3
TOTAL KNOWN INFORMATION	169	100.0	[illegible]	100.0	4338	100.0	53787	100.0
UNDER 3 YEARS	13	7.7	[illegible]	5.5	204	4.7	1162	2.2
FROM 3 TO 5 YEARS	14	8.3	55	13.1	543	12.5	4691	8.7
FROM 6 TO 9 YEARS	26	15.4	74	17.6	856	19.7	10894	20.3
FROM 10 TO 13 YEARS	39	23.1	109	26.0	1004	23.1	13466	25.1
FROM 14 TO 17 YEARS	65	38.5	136	32.4	1449	33.4	19021	35.4
18 YEARS AND OVER	12	7.1	23	5.5	282	6.5	4533	8.4

SEX	REPORTING SOURCE		CLUSTER B		TEXAS		1980-81 NATION	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL STUDENTS	169	100.0	425	100.0	4363	100.0	54504	100.0
MALE	92	54.4	222	52.2	2290	52.5	28979	53.2
FEMALE	77	45.6	203	47.8	2061	47.2	24986	45.8
UNKNOWN OR BLANK	0	0.0	0	0.0	12	0.3	539	1.0

ETHNIC ORIGIN	REPORTING SOURCE		CLUSTER B		TEXAS		1980-81 NATION	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
TOTAL STUDENTS	169	100.0	425	100.0	4363	100.0	54504	100.0
INFORMATION NOT REPORTED	1	0.6	2	0.5	9	0.2	1787	3.3
TOTAL KNOWN INFORMATION	168	100.0	423	100.0	4354	100.0	52717	100.0
WHITE	100	59.5	298	70.4	2305	52.9	36830	69.9
BLACK OR NEGRO	34	20.2	46	10.9	809	18.6	9232	17.5
HISPANIC-AMERICAN	31	18.5	72	17.0	1154	26.5	4985	9.5
AMERICAN INDIAN	0	0.0	0	0.0	8	0.2	243	0.5
ORIENTAL	1	0.6	1	0.2	28	0.6	595	1.1
OTHER	0	0.0	4	0.9	29	0.7	497	0.9
MULTI-ETHNIC BACKGROUND INDICATED	2	1.2	2	0.5	21	0.5	335	0.6